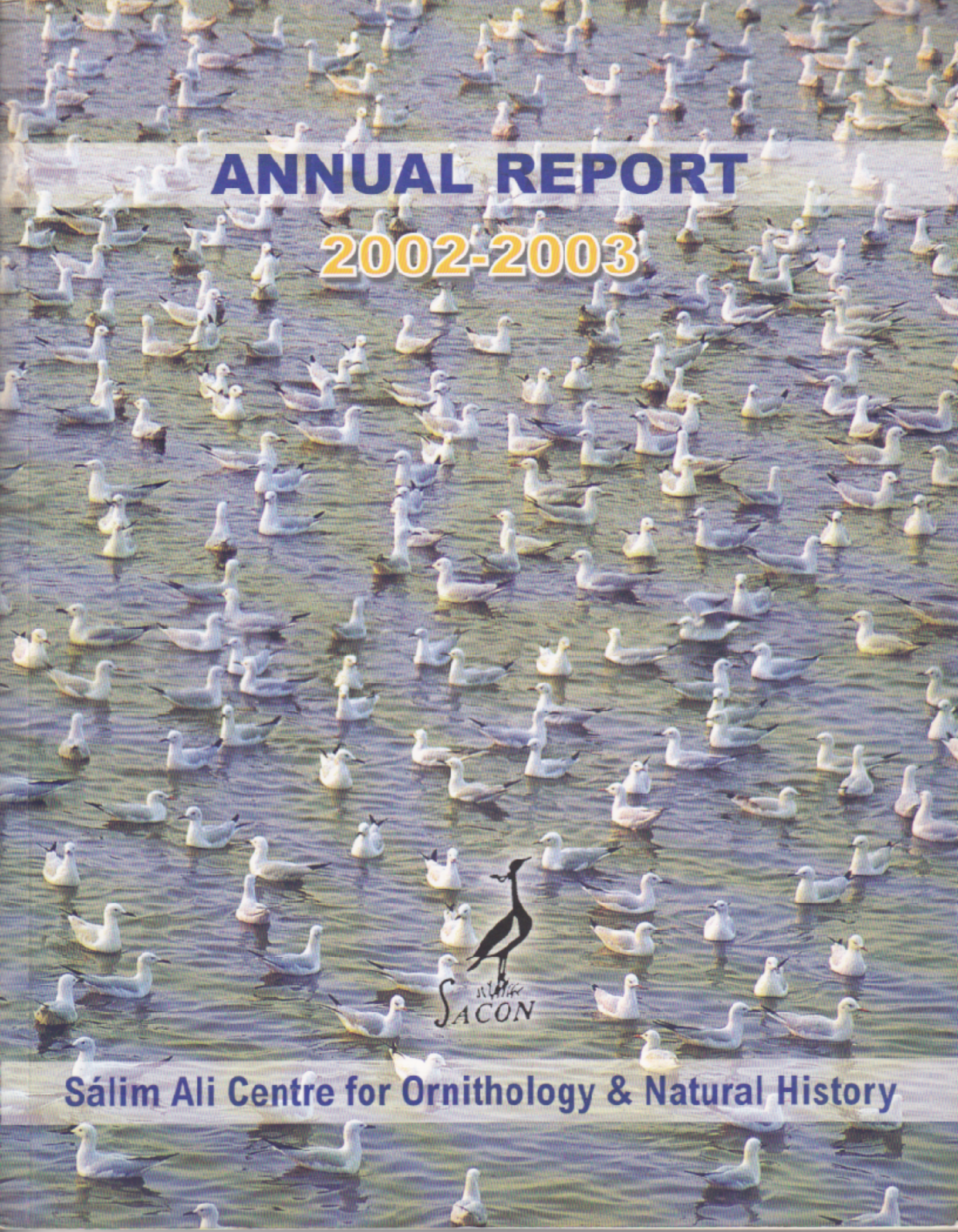


ANNUAL REPORT

2002-2003

SACON

Sálim Ali Centre for Ornithology & Natural History

Published by:

Director
Sálim Ali Centre for Ornithology & Natural History
Anaikatty, Coimbatore 641 108
Phone: 91-422-2657103, 2657104, 2657105
Fax: 91-422-2657088
Email: salimali@vsnl.com
URL: http://www.saconindia.org

Editorial Board:

Chief Editor	:	Dr. V.S. Vijayan
Executive Editor	:	Dr. S. Muralidharan
Members	:	Dr. Lalitha Vijayan
		Dr. Ajith Kumar
		Dr. S. Bhupathy

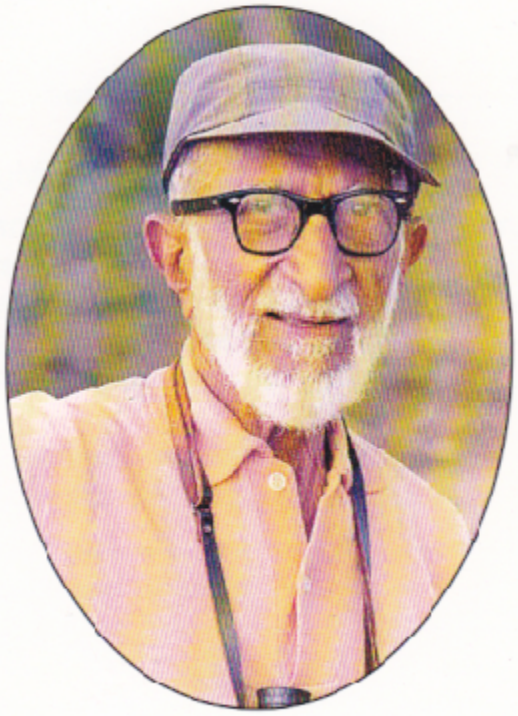
Cover: Gulls in Lakhota wetland in Jamnagar, Gujarat. *Photo*: V.S. Vijayan

Illustrations of the following birds are from 'Pocket Guide to the Birds of the Indian Subcontinent' by Richard Grimmett, Carol Inskipp & Tim Inskipp published by Christopher Helm, an imprint of A&C Black Publishers. Artist name is given in parenthesis.

Nilgiri Wood Pigeon (John Cox), Nilgiri Pipit (Clive Byers), Grey-headed Bulbul (Carl D'Silva), Narcondam Hornbill (Carl D'Silva), Broad-tailed Grassbird (Clive Byers), White-bellied Shortwing (Alan Harris), Greatpied Hornbill (Carl D'Silva), Indian Robin (Alan Harris) and WHite-headed Babbler (Craig Robson)

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Dr. Sálim Ali
(1896 - 1987)

CONTENTS

Director's note on the activities of 2002-2003 ---------- 1

Research activities - Highlights

I. Avian ecology and endangered bird conservation programme ---------- 5
II. Man and biodiversity conservation ---------- 20
III. Ecosystem structure and function ---------- 29
IV. Wetland conservation programme ---------- 37
V. Environmental Impact Assessment ---------- 42

University Department, Seminars, Workshops & Debates and Nature Education Activities

University Department ---------- 47
Seminars, Workshops and Debates ---------- 49
Nature Education Activities ---------- 52

Organisation ---------- 54
Staff of SACON ---------- 56
Infrastructure ---------- 56
Publications ---------- 57

Appendix I. Members of SACON Society ---------- 61

Audit Report, Significant account policies and notes forming part of accounts ---------- 65
Financial statements of SACON and projects ---------- 73

BACKGROUND

One of the long-cherished dreams of late Dr Sálim Ali was to establish a national centre for studies in Ornithology and Natural History. This was fulfilled in 1990, thanks to the efforts of the Bombay Natural History Society (BNHS), the country's oldest NGO, and the financial assistance of the Ministry of Environment & Forests (MoEF), Government of India. The centre befittingly named as Sálim Ali Centre for Ornithology and Natural History (SACON), is an autonomous organization registered under the Societies Registration Act 1860.

SACON came into being at a time when the twin issues, namely the sustainable use and conservation of natural resources figured in the global agenda. Realizing the indispensability of holistic approach in avian studies and conservation, the major objectives of SACON have been envisaged encompassing the entire natural history with ornithology at the centre stage.

The management of SACON is vested in a Governing Council comprising 11 members and its Chairman is the Secretary/ Special Secretary/ Additional Secretary to the Govt. of India, Ministry of Environment & Forests. The SACON Society has 53 members and its President is the Hon'ble Minister for the Environment & Forests, Govt. of India.

SACON'S MISSION

"To help conserve India's biodiversity and its sustainable use through research, education and peoples' participation with birds at the centre stage"

OBJECTIVES

- To design and conduct research in ornithology covering all aspects of biodiversity and natural history.
- To develop and conduct regular courses in ornithology and natural history for M.Sc., M.Phil. and Ph.D. and also, short-term orientation courses in the above subjects.
- To create data bank on Indian ornithology and natural history.
- To disseminate knowledge relating to ornithology and natural history for the benefit of the community and
- To confer honorary awards and other distinctions to persons who have rendered outstanding services in the fields of ornithology and natural history.

DIRECTOR'S NOTE ON THE ACTIVITIES OF 2002-2003

SACON had 28 research projects during the year 2002-2003 under various programmes, namely avian ecology and endangered bird conservation, man and biodiversity conservation, ecosystem structure and function, wetland conservation and Environmental Impact Assessment.

Endangered Bird Conservation Programme of the year recorded satisfactory progress of all the nine projects under implementation. Ecological studies on the Nilgiri Wood Pigeon, Nilgiri Pipit, Grey-headed Bulbul and Narcondam Hornbill threw light on the hitherto unknown facets of their ecology. 31 nests of Nilgiri Wood Pigeon, which is considered to be an elusive bird, seven nests of the Nilgiri Pipit, and 11 nests of Grey-headed Bulbul could be located.

The Lesser Florican Conservation Programme during the year located a new breeding site near Panchi in Upleka Taluka of Jamnagar District. Mapping the grasslands for developing a network of conservation areas for the Lesser Florican has been commenced.

Bird community studies continued in the Silent Valley, a relatively undisturbed forest, which attracted the attention of conservationists the world over during the late 1970s and early 1980s. All except one of the 16 endemic birds of the Western Ghats were recorded. Species composition in specific areas and its relation with elevation and vegetation were examined. Nesting of 23 species of birds was observed which include 21 nests of Malabar Whistling Thrush.

The project on hornbill-tree interaction with emphasis on keystone mutualists in the Nilgiri Biosphere Reserve has been completed attaining all the objectives set out in the project. A good population of the endemic Malabar Grey Hornbill was recorded in Benne in Mudumalai Wildlife Sanctuary. They subsisted mainly on fruits which varied between breeding and nonbreeding seasons. The Malabar Grey Hornbill enhanced the regeneration of fleshy fruit species. They depend on large trees for fruits as well as for nesting holes. The study has effectively established the Malabar Grey Hornbill as "mobile link" as it aids in the seed dispersal and regeneration of several tree species in the semi-evergreen forests. Figs hosted the Malabar Grey Hornbill, the 'mobile link' during the critical periods and hence designated as a keystone mutualists. All these information will be of great value in the conservation planning of the semi-evergreen forests for their biodiversity.

A short-term study on the Great Pied Hornbill in the Nilgiris could report one nest and throw light on their food which comprises seven species of fruits.

The second student project of SACON was on the roosting ecology and diet of the Narcondam Hornbill conducted for a period of three months. The study brought out the microhabitat for roosting, the roosting behaviour and the minute details of courtship displays. It also threw light on the diet of Hornbill during non-breeding season. The study highlights the need for conserving the matured forests with large trees for the survival of the Narcondam Hornbill, a species seen only in the tiny Narcondam Island (6.25 km²) and nowhere else in the world.

Work on the creation of a database on Indian Ornithology is progressing well. It is an exhaustive database and, the software is being made in such a way that any information on Indian birds could be accessed easily. It is expected to be launched by December 2003.

The long-term ecosystem monitoring project of Anaikatty campus launched during the last year has made steady progress. Baseline data on birds, reptiles, insects especially butterflies are being collected. Intensive studies on the population, ecology and social behaviour of Whiteheaded Babbler, Indian Robin and House Sparrow have made satisfactory progress.

The in-situ and ex-situ conservation programme for the Edible-nest Swiftlet in the Andaman and Nicobar Islands with its dual objective of offering 100% protection to selected caves and house farming programme showed 10-100% increase in the natural population. House farming efforts show that there was 75% hatching success of the eggs of Edible-nest Swiftlet incubated by the Whitebellied Swiftlet. Also there are signs of the Edible-nest Swiftlet foster cared by Whitebellied Swiftlet visiting the houses put up for them in Tugapur. Hopefully they would start nesting next year.

The ornithology group of SACON has initiated banding individuals of the selected major species of birds in the campus for monitoring their population, dispersal and social behaviour.

Toxicology team continued to highlight the concentration of various pesticides and metals in the body tissues of birds. The Whitebacked Vulture showed a high level of Lead, suggesting chronic exposure. Several banned and restricted persistent organochlorine pesticides were detected, although their levels were not lethal. The fish eating birds of Coimbatore, specially Pond Heron showed high levels of Copper, Zinc and Lead.

The massive number of fishes (1700) received under the UNDP project on "Inland Wetlands of India" are being analyzed for pesticides and metals. It would indicate the contamination profile of the wetlands in the country.

The SACON, during the year, entered a new but most essential area of research – Avian Physiology and Genetics by launching two projects. The projects are to bring out the physiological effects of air pollution on birds in urban areas and, the impact of attenuated background radiation on haematology of select avian species. Exhaustive literature surveys were made and, the methodologies analysed. The work would begin on obtaining permission to catch birds for blood samples.

Study on the reptiles in the higher altitudes of the Nilgiris has come up with more evidence to show how important are the shola and grasslands for certain species of reptiles. It is also interesting to note that all the eight species recorded in the Mukurthi National Park are endemic to the Western Ghats. The project would provide information on the hitherto neglected group of animals which would help redesign and plan conservation areas.

The Inland Wetlands of India project aimed at preparing a Protected Area Network of wetlands in the country entered the last phase. Collection of field data with the participation of around 600 people from various states and mapping of the wetlands above 2.5 ha in size in 72 districts and, mapping of all the wetlands identified by the SAC Ahmedabad have been completed. Wetlands have been prioritized based on the size, biodiversity values and economic use. The tentative list of prioritized wetlands for conservation programme was discussed in the regional workshops conducted in Coimbatore, Dehra Dun, Kolkata, Ahmedabad, Jaipur, Pune and Hyderabad. With the involvement of active participants of the fieldwork, various concerned NGOs, forest department officials, a consensus could be evolved on the list of wetlands to be considered for the National Protected Area Network of Wetlands.

A national report and state-wise reports are being finalized, along with an atlas of wetlands for selected districts.

SACON has launched, although belatedly, a challenging job of modelling the Keoladeo National Park Ecosystem with the data for 10 years from 1981-1991 collected by a team of scientists under the aegis of the BNHS, supported by the US Fish and Wildlife Service. The predictive model that is being tried, would be a valuable tool for the management of wetlands.

SACON also thought it pertinent to monitor the Keoladeo National Park Ecosystem and compare the data with those collected earlier and, hence launched a project for the same during the year. The drastic changes occurred in the area during the last decade and the impacts they have on the population of the waterfowl would be monitored.

SACON has been creating a database on wetland biodiversity, as a part of the UNDP funded project on inland wetlands of India. Towards the end of the financial year, the MoEF identified SACON as an ENVIS Centre for wetland ecosystem. This has boosted our activities on the database. Very soon the database will be available on public domain.

SACON's ecological study on the mammals, birds, herpetofauna and butterflies in Teesta river basin in Sikkim shows how important is even the agricultural fields for conservation of biodiversity in the basin. The agricultural landscape has high species richness, especially of birds and butterflies, probably because of the retention of native trees and forest patches within the farm areas and, importantly, very low use of agricultural chemicals.

SACON has launched a new project with the funding from the UGC to look into the behavioural and ecological adaptations as well as conservation requirements of the three newly designated Common langur, namely Tufted Gray Langur occurring in Tamil Nadu and Kerala; Southern Plains Gray Langur primarily in Deccan Plateau, and Black-footed Gray Langur confining to South Coorg in Karnataka. The last of this is the most endangered non-human primate in India. The project, just at the initial stage, would bring out the ecological requirements and conservation plan for the three species which had been considered till recently as one species.

The pilot project on the preparation of People's Biodiversity Register covered one of the villages in the fringe area panchayat of the Nilgiri Biosphere Reserve. The study brought out a wealth of information on the flora and their various uses including the medicinal values. Similarly, the villagers elicited information on several species of mammals, birds, fishes, anthropodes and reptiles. They highlighted the medicinal value of some of the species.

Another interesting project launched during the year was aimed at looking at the plants conserved in the temples in Tamil Nadu. Some of these plants were venerated since time immemorial by the devotees as holy as the prime deity of the temple which is termed as "Sthalavriksha". The project would highlight the value of these trees in the conservation of biodiversity.

EIA Division of the SACON undertook three major projects to assess the impact of various pipeline projects on flora and fauna.

The Ph.D and M.Sc programmes with the Bharathiar University continued. Of the 12 students for Ph.D., two have been awarded degrees. Two each have submitted their theses for Ph.D and M.Sc. The work of the rest of them are in progress. One of the theses of SACON, submitted by Sr. Nimala on Avian Community of the SACON campus under the guidance of

Dr Lalitha Vijayan has won Gold Medal of the University for the best thesis of the year.

The Nature Education Programme for the Sálim Ali Nature Club Network of Schools continued with various programmes. Nature awareness campaigns, one-day nature camps, and visit to the forests and wetlands were part of the programme. About 1500 students from 52 schools are members of the network. The Salim Ali Rolling Trophy for Nature Competition for 2002-2003 has been retained for the second consecutive year by the SBOA Matriculation Higher Secondary School. One of the most gratifying results is that the students were so inspired and motivated by our nature education programmes that they could develop research projects on environmental issues. One such project envisaged by the students of VIII Std belonging to PSGG Kanya Gurukulam Girls High School, comparing the ecological and economic aspects of organic and inorganic farming won state laurels. As a special gesture to promote and encourage their enthusiasm, they were invited to the Annual Research Seminar of SACON to present their research work.

We have also launched a nature club network for colleges in the Coimbatore area. The education programme of SACON has benefited various other organizations such as Bharathiar University, Avinashilingam Deemed University, trainees of the State Forest Service Colleges of Coimbatore and Dehra Dun, and, the trainees of Southern Forest Rangers College.

SACON has also held a series of brainstorming sessions on biodiversity and globalization emphasizing the impacts of globalization on biodiversity conservation. These were attended to by professionals from Coimbatore and neighbouring areas.

One of the important events of the year which has a bearing on the future of SACON, is the structural changes broughtout in the SACON Society and Governing Council. At an Extraordinary General Meting held in April 2002, the Hon'ble Minister for Environment and Forests, Govt. of India has been made as the President of the SACON Society in place of Mr B G Deshmukh, the Ex-Cabinet Secretary who is also the President of the BNHS. The strength of the Governing Council has been brought down from 17 to 11 for effective functioning and curtailing expenditure. The invaluable contributions made by Mr Deshmukh as President of the SACON Society were appreciated and acknowledged at the EGM.

The Ministry of Environment and Forests, Govt. of India continued to provide financial support.

8 September 2003

Dr. V.S. Vijayan
Director



Rosy Pastor: near Lakhota lake, Jamnagar

Photo: Lalitha Vijayan

RESEARCH ACTIVITIES - HIGHLIGHTS

I. AVIAN ECOLOGY AND ENDANGERED BIRD CONSERVATION PROGRAMME

It is reported that the world loses about 1,70,000 sq km. of tropical forests every year and the extinction rate of species is 25,000 times the natural rate. Of the 9,723 bird species of the world, around 1,100 are globally threatened. In India, of the 1,295 species, around 78 are threatened. In this background SACON launched an Endangered Species Programme focusing on the status, distribution and ecology of the species concerned in order to formulate long-term conservation programmes.

1. Status and ecology of the Nilgiri Wood Pigeon and Nilgiri Pipit in the Western Ghats

The Nilgiri Wood Pigeon *Columba elphinstonii* and Nilgiri Pipit *Anthus nilghiriensis* are two of the 16 bird species endemic to the Western Ghats, one of the hotspots of biodiversity and Endemic Bird Areas of the world. The Nilgiri Wood Pigeon is globally threatened while Nilgiri Pipit is near threatened (Threatened Birds of Asia, BirdLife International 2001). Conservation of these species requires not only knowledge on their status, but the requirements for their feeding, breeding and other vital activities.

OBJECTIVES

- Determine the status of the two rare endemic birds of the Western Ghats, namely the Nilgiri Wood Pigeon and Nilgiri Pipit.
- Identify the key factors affecting the survival of these species and suggest management options for their conservation.

After a reconnaissance survey in the Nilgiri, Palni, and Anamalai hills, more specifically in the semi-evergreen, evergreen and montane shola forests and grasslands, the intensive study sites were selected at Kukkal (Upper Palni Hills) for the Nilgiri Wood Pigeon and at Upper Bhavani and Mukurti National Park (Upper Nilgiris) for the Nilgiri Pipit. Studies have been conducted on the status and ecology of these species, including abundance in different seasons, foraging, breeding and other activities following standard methods.



Nilgiri Wood Pigeon

Nilgiri Wood Pigeon

Bird survey was conducted in Silent Valley, Upper Nilgiris and Palni hills. Kukkal had the maximum density. The Nilgiri Wood Pigeon was found in pairs during breeding, but in flocks of 6-10 and maximum 40 during feeding mainly in the non-breeding season. A 50 ha plot was identified in Kukkal for intensive studies.

General Behaviour

Behaviour of the Nilgiri Wood Pigeon was classified mainly into foraging, maintenance, resting, breeding and others. Foraging time was more in



Kuthirayar falls and shola in the intensive study area
Photo: S. Somasundaram

Table 1. Population of the Nilgiri Wood Pigeon Observed during the survey in 2003

Area	Pairs/10 ha
Silent Valley, Nilgiri hills	5
Upper Bhavani	4
Thaishola	5
Pambar shola, Palni hills	12
Bombay shola	1
Kukkal	24
Kuthirayar	4
Mathikettan shola	10
Tiger shola	4
Perumpallam	0
Oothu – Pannakkadu	1

summer (57%) and less during monsoon (46%) and, still less in winter (38%). Maintenance activities and resting were less during summer as they spent more time for feeding and breeding (Fig. 1).

Foraging

Foraging was by gleaning or probing on twigs or small branches of trees. On trees, they prefer center edge or middle edge for gleaning by perching, walking and leaping from branch to branch. They frequently visited old buildings for taking soil. They also searched on the ground, mainly for fruits, caterpillars and snails. *Chlerodendron* sp., *Ficus* spp., *Macaranga* sp., *Lantana camera, Casearia zeylanica, Syzygium jambos,* Luraceae Sp. *Elaeagnus spp., Viburnum cylindricum,* Rubeaceae trees and three unidentified fruits were observed eaten. Feeding rhythm in different seasons depended on the weather. They mainly preferred unripe fruits of 3 mm to 12 mm in diameter. The chicks were also fed by these but mostly on figs.

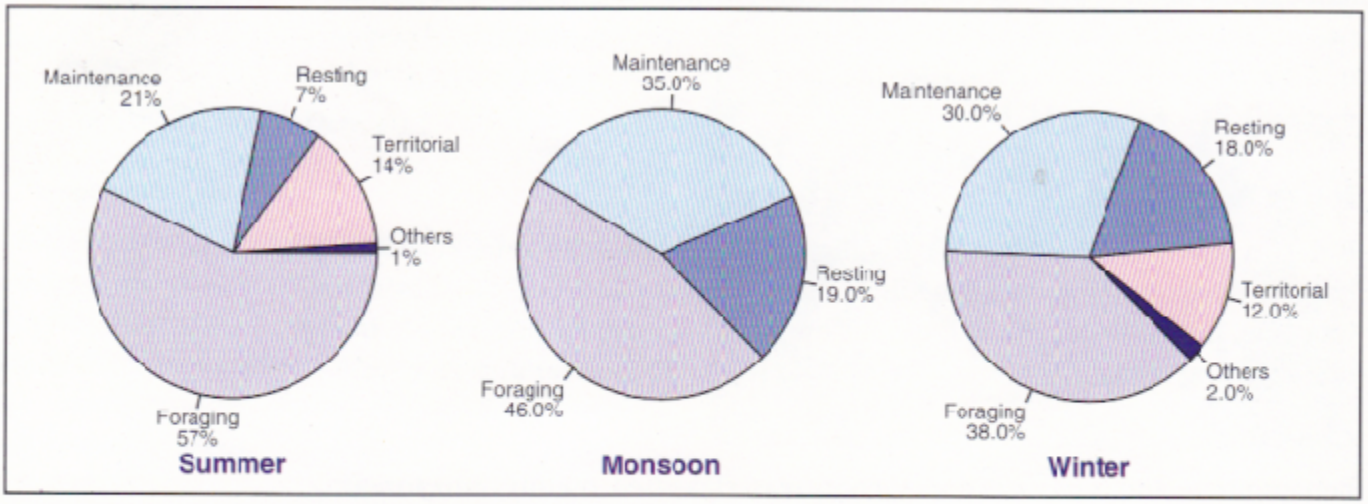


Figure 1. Behaviour of the Nilgiri Wood Pigeon in different seasons

Breeding

The number of the Nilgiri Wood Pigeon at Kukkal increased during the breeding season, which also coincided with the abundance of fruits. 31 nests were observed, 27 inside the shola forest at Kukkal (Palni hills), one in Siruvani and three in Silent Valley - Nilgiri Hills in the evergreen forest. Nesting was from February to May with a peak in April. Nests were on medium to large trees covered with climbers (lianas). Canopy cover and nearness to water were the two positively significant factors determining the nest-site. Breeding behaviour was studied throughout the nesting cycle. Feeding rhythm of the chicks was similar to that of the adults. Age-wise feeding rate showed decrease with growth of the chicks.

Most of the nests were preyed upon after hatching while nine nests were preyed upon in the egg stage itself. Only five nests were successful in this season, with one chick for 6 pairs. Success of hatching and fledging was 84% and 16% respectively.

General bird community in Kukkal area in Kodaikanal

Eighty six species of birds were observed in the study area at Kukkal with the maximum species and abundance in April and minimum in August. Nests of some other endemics, namely the Grey- breasted Laughing Thrush, Nilgiri Flycatcher, Black-and-orange Flycatcher and White-bellied Shortwing were found inside the shola forest in Kukkal.



Nilgiri Pipit

Nilgiri Pipit

More areas and different habitats such as shola, grassland, tea, wattle and pine plantations were surveyed during the year. There was, mostly, one Nilgiri Pipit in 10 ha area on the edge of the shola and plantations. The number fluctuated during monsoon. In the grassland (10 ha) there were 13 and in the intensive study area (5 ha) there were 6. In the tea estate only 2 pipits were found in about 50 ha while there were 13 pairs in around 1400 ha area in the Upper Nilgiris at the beginning of the breeding season (February – March 2003).



Intensive study area at Upper Bhavani. Inset- nest of the Nilgiri Pipit with chicks

Photo: J. Umamaheshwary

General behaviour

The Pipit spent 32-33% of time for foraging in all the seasons except in winter when it spent slightly more time (Fig. 2). Other activities showed striking

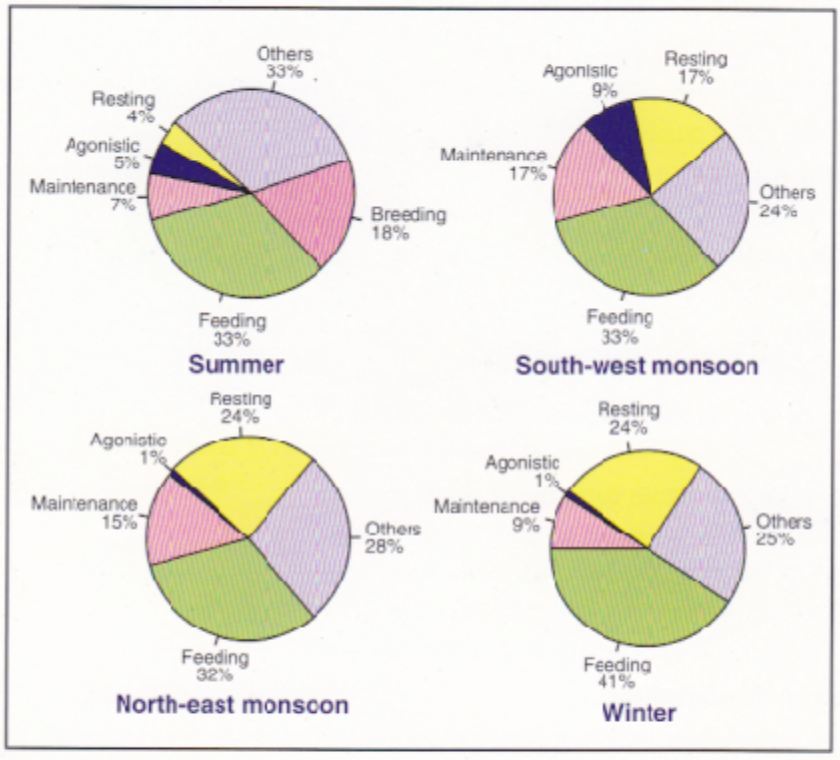


Figure 2. Activity budget of the Nilgiri Pipit in different seasons

difference; 7% time for maintenance in summer and 17% in the monsoon. The Pipit became more agonistic during monsoon when more species of raptors came into the study area.

Food and feeding habits

The Nilgiri Pipit spent most of the time in short grass areas for feeding. Foraging was by gleaning or sallying. During non-breeding season they ate seeds of the grasses mainly *Isachne kunthiana*, *Eragrostrostris nigra* and *Isachaemum ciliare*, whereas in the breeding season they took beetles, flies, grasshoppers and crickets. Feeding rhythm changed in different seasons.

Breeding

The Nilgiri Pipit preferred marshy area with short grass for nesting. There were 7 nests in 4 ha marsh in the 14 ha intensive study area. The nesting period was February to May. Nest and nest-site characteristics and other details were recorded. The Nilgiri Pipit constructed their nest under the grass clump with better concealment. Nest-entrance was oriented northeast, southeast and east, probably in response to sunlight thus achieving a favourable thermal environment. Peak period of egg-laying was in March-April. The parents fed the chicks mainly with flies, beetles and worms. Out of the 7 pairs, only two were successful with four chicks, nesting success being only 27%.

Principal Investigator:
Lalitha Vijayan
Junior Research Fellows:
J. Umamaheshwary &
S. Somasundaram
Project period:
October 2001- September 2004
Budget:
Rs. 8,39,600/-
Funding source:
MoEF, Govt. of India
Status:
Ongoing

Associated species

The Nilgiri Pipit fed in small flocks or in pairs, associated with Tickell's Leaf Warbler, Pied Bush Chat, Great Tit, Ashy Wren-warbler and Rose Finches. The birds feeding with the pipit within 5-meter radius are considered as the associated species. There were a few observations of competition between individuals of Nilgiri Pipit as well as with other species. Nests of the Paddy-field Pipit, Pied Bushchat and Ashy Wren-warbler also were observed in the same intensive study area.

2. Status, distribution and ecology of the Grey-headed Bulbul *Pycnonotus priocephalus* in the Western Ghats

Grey-headed Bulbul, an endemic, globally threatened species, occurs in certain evergreen patches of the Western Ghats. Its distribution extends from Goa to Kalakkad-Mundanthurai and it prefers low elevation rainforests. Much has not been known of its distribution and ecology, probably because of its patchy distribution.

OBJECTIVES

- Determine the current status and distribution.
- Habitat requirements.
- Breeding biology.
- Foraging ecology.
- Various threats to its population.
- Evolving a conservation programme for this rare, endemic species.

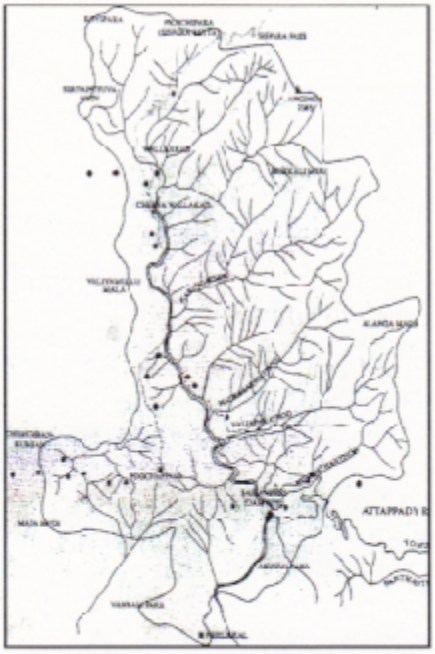
Extensive surveys were carried out in various parts of the Western Ghats. The major areas covered include Siruvani Reserve Forests, Silent Valley National Park, Palni Hills, Kudremukh National Park, Kalakkad-Mundanthurai Tiger Reserve, Srivilliputhur Wildlife Sanctuary, Indira Gandhi Wildlife Sanctuary and National Park. In the Kudremukh National Park, Karnataka 18 pairs were recorded. In Chinnar Wildlife Sanctuary seven Grey-headed Bulbuls were recorded at old Mangappara. Extensive surveys were done in Siruvani during September and October and recorded 22 and 16 birds respectively. Based on these surveys, Siruvani Reserve Forest was initially selected for detailed ecological studies of the Grey-headed Bulbul.



Grey-headed Bulbul

Although there were 22 pairs of Grey-headed Bulbuls in Siruvani during September, the number drastically declined to 9 which was inadequate to have a detailed investigation to draw significant conclusions. Hence, the intensive study area was shifted to Silent Valley National Park where 24 pairs were present.

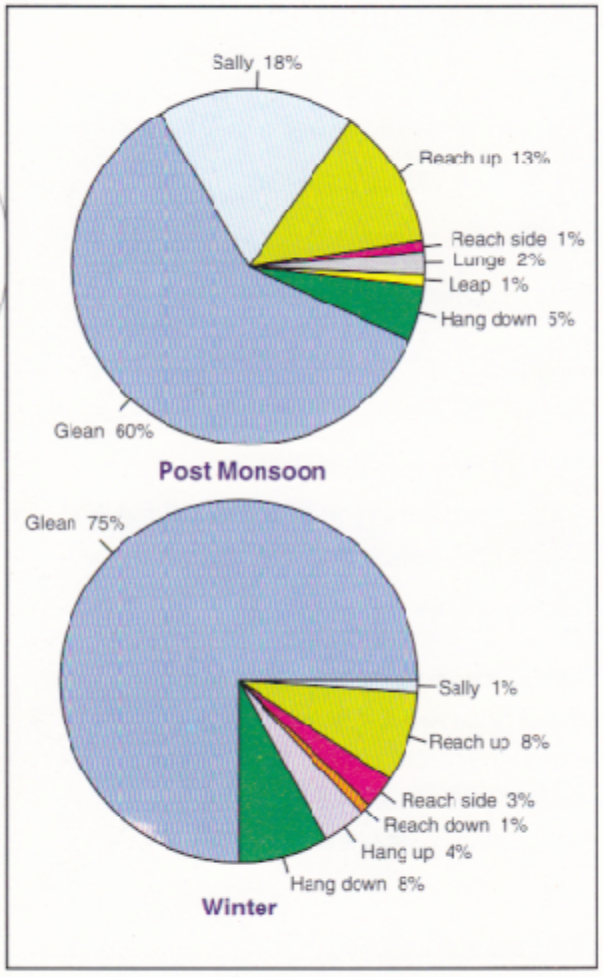
In Silent Valley also, it had a patchy distribution, confining to thick *Calamus* and shrub dominated patches.



The distribution of Grey-headed Bulbuls in Silent Valley and adjacent areas

Foraging ecology

The Grey-headed Bulbul forages in pairs or in-groups (Maximum 6 individuals) and feeds mainly on fruits. 442 observations were made on the feeding habits of the Grey-headed Bulbul. The food comprises fruits (61.85%) arthropods (40.5%) and nectar. The mean height of trees used for foraging was 4.83 $\pm$ 3.34 m (range: 1-22 m) and the mean foraging height was 3.63 $\pm$ 2.58 m (range: 1-20 m). The birds foraged more in the upper and middle edges of the canopy; 26.54 % and 26.3 % respectively. The average foliage density at the point of observations was 41$\pm$19.98& (range; 4-80%). The major near-perch and aerial manoeuvres identified were glean (pick up food item from nearby surface), reach (extend legs and necks), hang (use



Foraging maneuvers of Grey-headed Bulbul

legs and toes to suspend), lunge (rush by rapid leg movements), leap (launch into air with legs than wings) and sally (fly from a perch). The most preferred manoeuvre was glean (61.54%) followed by sally (15.88%), reach up (12.56%) and hang down (5.88%).

A significant difference was found in the mean height of trees used for foraging (4.16±2.67 and 5.65±3.11) and the mean foraging height (3.23±2.27 and 8.04±4.41) during the northeast monsoon. The major foraging manoeuvres during the monsoon and the winter are given in the figure.

Breeding biology

Twenty four pairs of Grey-headed Bulbul have been located in the Silent Valley National Park. 11 nests were recorded from three intensive study areas, one in Siruvani Reserve Forest, one in Karuvarakundu Reserve Forest of Nilambur South Division and nine in Silent Valley National park. The nests located in the last two areas were during January to March but that in the Siruvani was in September. Of these, five nests were in the under-story shrubs and four in *Calamus* patches. Two nests were at the height of about 10 m hanging on vines. The nest is a cup of small twigs and vines, of dead leaves (*Calamus* sp) or of green and dead leaves and, well concealed among foliage. Most of the nests were located during the nestling period. In all the cases the clutch size was two. Out of the 11 nests located, four were preyed upon. The preliminary data on the nesting microhabitat indicates that the bird shows preference to marshy areas dominated by *Calamus* or thick undergrowth of *Strobilanthus* spp. and *Glochidium* spp. for nesting.



Grey-headed Bulbul nest at Cheriya Walakkad

Photo: P. Balakrishnan

Principal Investigator:
V.S. Vijayan
Research fellow:
P. Balakrishnan
Duration :
3 years
Date of commencement:
2 July 2001
Budget :
Rs. 4.64 lakhs
Funding agency:
MoEF, Govt. of India
Status:
Ongoing

3. Roosting ecology and diet of the Narcondam Hornbill *Aceros narcondami* at Narcondam Island Sanctuary, A&N Islands, India

The Narcondam Hornbill shows the highest degree of endemicity among the Indian avifauna, and is amongst the top few species which have small ranges worldwide. Thus the Narcondam Hornbill attains the highest priority for avian conservation in India.



Narcondam Hornbill

A study to quantify and characterize the roosting as well as nesting habitat of the Narcondam Hornbill, *Aceros narcondami* was conducted during January, February and March 2003. Diet composition as well as courtship and mating was also observed.

Line transect Method was adopted to estimate density of hornbills. *Distance* programme was used to analyze the data. It calculates density at three cut points and generates 95% confidence interval for each estimate. The density of hornbills was found to be 54 birds per sq km. Considering the size of the island (6.8 sq km) , the population can be around 365 birds.

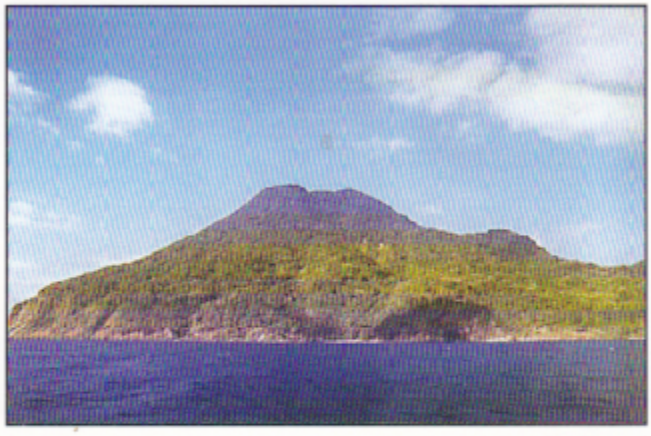
OBJECTIVES

- Study the roosting habitat.
- Document breeding habitat.
- Examine the diet composition during January-March.

Seventeen roost sites were located and 15 variables were recorded for each site. Habitat availability was assessed by recording the same variables at random sites. The Wilcoxon matched pair signed rank test showed that diameter at breast height and the height of the roost tree which is indicative of mature forest, to be significant at probability value 0.05. GBH, height of roost tree and height of first branching are the main factors leading to the choice of roost sites. A positive correlation between GBH and tree height was also obtained.

Characteristics of fourteen nests and their sites were recorded. Nest height and the average canopy height of the nest tree were positively correlated. Nest tree height and canopy cover are the main factors leading to the choice of nesting sites.

Courtship displays were observed eleven times in which mutual preening, aggression, calling and head bobbing were timed. Of the eleven courtship displays, mounting and copulation were observed on four occasions. Exchange of nuptial gifts of fruit and occasionally mantid was also observed. Copulation was accompanied by side-to-side swooshing of tail with the male spreading his wings to cover the female. Multiple mounting was observed on two of the four occasions. These displays were performed on an exposed perch usually observed in the vicinity of an already chosen nest site (n = 9).



Narcondam Island

Photo: R. Vivek

Investigator:
R. Vivek
Supervisor:
V.S. Vijayan
Duration:
3 months
(January-March 2003)
Budget:
Rs. 50,000/-
Funding agency:
SACON R&D Funds
Status:
Completed

Direct observations of foraging and examination of seeds from the midden under roosting trees and active nesting sites suggest that the hornbills depend mainly on *Ficus* spp as well as fruits of the plants belong to the families such as Myristicaceae, Sterculiaceae, Lauraceae, Meliaceae, Sapindaceae and Ebanaceae. The diet also includes a wide variety of animals, namely geckos, skinks, spiders, mantids, land crabs and snakes. 43 such collections were made. A total of 10,119 seeds from 31 species were present (only 14 of which could be identified at least to family).

Nearly 73% of the hornbills diet consisted only of 4 species (*Myristica andamanica, Caryota mitis, Sterculia rubiginiosa, Myristica* sp).

The study underlines the importance of the conservation of mature undisturbed forests with large trees for the survival of Narcondam Hornbill.

4. Conservation of the Lesser Florican in Western India



Lesser Florican
Photo: R. Sankaran

Lesser Florican *Sypheotides indica*, once common and wide spread, is critically endangered today because of the hunting pressures and loss of habitats. The Lesser Florican breeds during the south-west monsoon, in Western India in grasslands known as *beed, vidi, rakhal* or *jod*. The grasslands have traditionally been protected from livestock grazing during the monsoon and the grass is harvested, baled, stored and used during the summer or during droughts. These protected grasslands are therefore crucial to the well being of agrarian and pastoral economies. Less than 7000 km^2 of grass *beed* is now left (less than 2000 km^2 of which is suitable to the Lesser Florican) and is seriously threatened by conversion into agriculture or degradation into grazing lands.

ACTIVITIES OF 2002-2003

Survey of Saurashtra and Kachchh area to:

- map grasslands in a few florican sites as a precursor to the larger proposed project on habitat mapping of grasslands in western India,
- survey known breeding sites and identify new sites and,
- follow up on the bustard conservation programme that had been initiated in Kachchh in 2000.

In a Western Indian context, the protected fodder producing grass *beed*, will form the corner stone for any initiative to develop a network of conservation areas in the region. While surveys in the past have identified many of these grassland sites, there is a continuing need for identifying more areas for a long-term conservation of the species.

The over all incidence of breeding of floricans in the areas surveyed was poor mainly because of the drought conditions. No birds were either recorded or reported from Kachchh, Jamnagar, Jam Jodhopur, Junagadh, Jasdan, Rajkot, Chotila and Wadhwan. Breeding concentration was located only at three areas: around Gondal, Paneli and Bhavnagar (Velavadar). About 42 male floricans were recorded and an additional 30 birds were reported. GPS recordings were made at the 32 sites visited. A new area important as a Lesser Florican breeding area was located near Paneli in Upleta taluka of Jamnagar District. More privately owned grassland sites were visited in the Chotila – Bamanbore – Anandpur triangle. This area is currently under litigation as it falls under the land ceiling act.

No progress had been made, because of the earthquake in Kachchh, on the acquisition of about 2500 hectares of grassland where two species of bustards – the Lesser Florican, and the Great Indian Bustard breed, and a third, the Houbara winters. We had mapped the area and a proposal that included the survey numbers of the areas to be acquired had been submitted to the relevant authorities in 2000. The matter has been taken up with the concerned district and state authorities. It is expected that progress will be made in this programme.

Principal Investigator:
R. Sankaran
Duration:
August – September 2002
Budget:
Rs. 45,000/-
Funding agency:
SACON R&D funds
Status:
Ongoing

5. Monitoring the bird community in the Silent Valley National Park

OBJECTIVES

- Assess the bird communities in the different habitats in the SVNP.
- Compile a baseline data for monitoring the bird communities and populations of a few species.

Bird community studies, although a topic of great interest in the world, have not picked up in India, especially in the evergreen forests. Silent Valley National Park (SVNP), one of the core areas of the Nilgiri Biosphere Reserve in the Western Ghats is an Important Bird Area of India. It comprises an area of 8952 ha with altitudes ranging from 900 to 2383 m. The average annual rainfall varies from 3200 mm to 7500 mm increasing with the elevation. Vegetation of Silent Valley area comprises mainly the West Coast Tropical Evergreen and Semi-evergreen forests. At higher elevations, Southern Montane Wet Temperate forests and grasslands predominate. Mixed Moist Deciduous forest and Savanna Woodland also exist in some areas. Floral and faunal diversity is very high.



Malabar Whistling Thrush on its nest

Photo: K. Anoop Das

The project was initiated in March 2002. Surveys were conducted in all the main areas, Sairandhri, Neelikkal, Poochapara, and Walakkad – Sispara covering all the habitats. Later unlimited- distance point counts were conducted in selected



Broad-tailed Grassbird

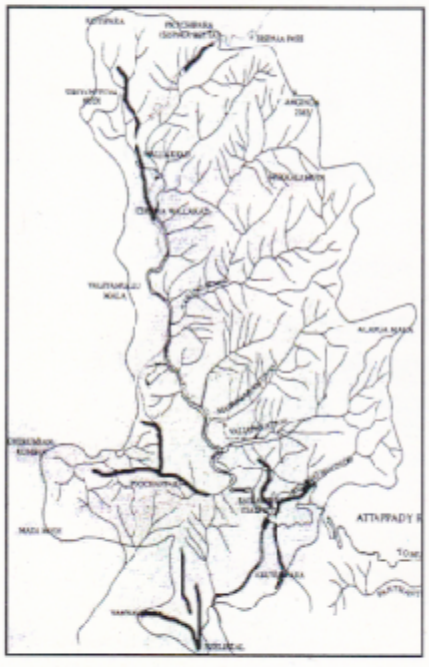


White-bellied Shortwing

Endemic birds of the Western Ghats

	Common Name	Scientific Name	Status
1	Black-and- rufous Flycatcher	*Ficedula (Muscicapa) nigrorufa*	NT
2	Blue-winged Parakeet	*Psittacula columboides*	-
3	**Broad-tailed Grassbird**	***Shoenicola platyura***	**T**
4	Grey-headed Bulbul	*Pycnonotus priocephalus*	-
5	Rufous Babbler	*Turdoides subrufus*	-
6	Malabar Grey Hornbill	*Ocyceros (Tockus) griseus*	-
7	Nilgiri Pipit	*Anthus nilghiriensis*	NT
8	**Nilgiri Laughing Thrush**	***Garrulax cachinnans***	**T**
9	**Nilgiri Wood Pigeon**	***Columba elphinstonii***	**T**
10	Nilgiri Flycatcher	*Eumyias (Muscicapa) albicaudata*	NT
11	**White-bellied Shortwing**	***Brachypteryx major***	**T**
12	Small Sunbird	*Nectarinia minima*	-
13	White-bellied Blue Flycatcher	*Cyornis (Muscicapa) pallipes*	-
14	White-bellied Treepie	*Dendrocitta leucogastra*	-
15	Wynaad Laughing Thrush	*Garrulax delesserti*	-
16	Grey -breasted Laughing Thrush	*Garrulax jerdoni**	NT

Note: T=Threatened, NT= Near threatened, - =Least concern,
* not present in SVNP/ Nilgiri Hills.



Silent Valley National Park: bold line shows the transects for census

areas in different months/seasons covering about 17 ha in each area. Time of observation, species of bird, number of individuals of each species, height and distance from the point were recorded. The survey was for three hours each in the morning and evening (06.30 to 09.30 and 15.30 to 18.30 h) spending 10 minutes at each point.

In all, 124 species of birds were observed in the Silent Valley National Park. Of the 16 species of endemic birds in the Western Ghats, all except the Broadtailed Grass-warbler, White-bellied Shortwing (observed rarely earlier) and Grey-breasted Laughingthrush were recorded during this study. The Nilgiri Laughing Thrush was locally common in the undisturbed shola forests at Sispara. Other endemics such as the Black-and-orange Flycatcher and Nilgiri Flycatcher were common at higher elevations (Sispara - Walakkad region), while White-bellied Blue Flycatcher, White-bellied Treepie, Malabar Parakeet were common at low to medium elevation forests. The Nilgiri Wood Pigeon was also frequently observed in these areas. The Malabar Grey Hornbill, Rufous Babbler, Grey-headed Bulbul, Nilgiri Pipit and Wynad Laughing Thrush were sighted occasionally.

The bird species diversity was high in SVNP. Among the four areas surveyed, the maximum number of species was recorded in Sairandhri (79 species), followed by Poochapara (70 species), Neelikkal (69 species) and Walakkad-Sispara (49 species). Species diversity was also in the same order varying from 3.98 to 3.52. Density was about 10-12 per ha in these areas. Nesting of 23 species was observed with more nests of the Malabar Whistling Thush, Small Sunbird, Red-whiskered Bulbul and Quaker Babbler. A few breeding species such as the Black Bulbul, White-eye, Yellowbrowed Bulbul and Maroon-backed Imperial Pigeon dominated specific areas. Species such as the Black Bulbul, Hill Myna moved away from the park after breeding. 21 nests of the Malabar Whistling Thrush were observed during this period. Most of these nests were alongside the stream, built in caves and inaccessible areas near waterfalls except one each in a building and on a tree. The nest site was about 6 m from water with 60% rock cover and most of them were fully concealed. Nesting success was directly related to the concealment.

Principal Investigator:
Lalitha Vijayan
Consultant:
S. N. Prasad
Junior Research Fellow:
K. Anoop Das
Project period:
3 years (since March 2002)
Budget:
Rs. 6 lakhs
Funding source:
SACON/MoEF
Collaborating institution:
Kerala Forest Dept.
Status:
Ongoing

6. In-situ and ex-situ conservation of the Edible-nest Swiftlet *Collocalia fuciphaga* in the Andaman & Nicobar Islands

Based on an intensive survey of the Edible-nest Swiftlet in the Andaman & Nicobar Islands by the Sálim Ali Centre for Ornithology & Natural History, Coimbatore, between 1995 and 1997, two conservation measures, both in-situ and ex-situ, were proposed. This has a dual objective of developing protection systems at select nesting caves where eventually sustainable harvesting regimes could be initiated as well as developing farming of the species in houses.

The in-situ conservation measures involve round the clock protection to some caves in the Andaman Islands, during the nesting season of the Edible-nest Swiftlet. A cave at the Interview Island, has been protected since December 1999, and a complex of over 28 caves at Pathi Level, North Andaman Island has been protected since January 2001. Protection of the cave at Interview Island, now in the fourth year, began on the 4th of January 2003. The population, which was declining at the rate of about 30% per annum, had stablised by 2002, but counts in 2003 indicate that there was no growth. This was because of a raid by poachers in 2001, during which we lost the majority of the chicks, which precluded the influx of birds this year. Protection of the cave complex at



Edible-nest Swiftlet
Photo: R. Sankaran

Chalis Ek, now the third year, began on 8 January 2002. Preliminary counts indicate that there was an increase in the populations of the various caves between 10% and 100% (average growth of 23%), indicative of significant gains made as a result of protection during the first year.

Investigator:
R Sankaran
Collaborating agency:
Department of Environment and Forests, Andaman & Nicobar Islands
Duration:
December 2002 – March 2005
Budget:
Rs 10 lacs
Funding agency:
Department of Environment and Forests, Andaman & Nicobar Islands
Status:
In progress

The ex-situ conservation measures proposed include providing special houses with suitable roof where the Edible-nest Swiftlet will breed, thereby significantly building up populations in these islands, and providing an alternate source of livelihood for nest collectors, farmers, and poorer sections of the community. As a pilot programme two 'houses' where Whitebellied Swiftlet breed were selected and experimental transfer of the eggs of Edible-nest Swiftlet were undertaken. 55 eggs were transferred in 2000, 108 eggs in 2001 and 109 eggs in 2002. Hatching success was over 75% in the latter two years but could not be ascertained in the first year. Edible-nest Swiftlets have been sighted at the house in Tugapur during 2002, but nesting has not yet commenced.

7. Survey of the Great Pied Hornbill nests and determination of breeding season diet in the Nilgiris

OBJECTIVES

- Identify the potential breeding sites and assess nest site characteristics of Great Pied Hornbill in the Nilgiris.
- Determine the fruit species utilized by Great Pied Hornbill during the breeding season.

The Great Pied Hornbill also known as the Great Indian Hornbill, is one of the larger hornbills of the Indian subcontinent. In India, this species is distributed disjunctly along the Western Ghats from Kolaba to Thenmalai and along the base of the Himalayas from Uttar Pradesh to Assam. It is primarily frugivorous and prefers large tracts of primary evergreen, semi-evergreen and moist deciduous habitats of lowland tropical forests. The population of this species, according to published reports, has been on the decline due to deforestation and hunting. A large extent of the evergreen forests in the Western Ghats, the prime habitat of this species, have been converted into tea, coffee, eucalyptus and cardamom plantations. In this context, a study on the dietary requirements and habitat characteristics of this threatened species in the Nilgiris was found to be of utmost importance for the conservation of the species.



Great-pied Hornbill

The study covered the Nilgiris and the adjoining Coimbatore District.

Fieldwork was initiated during the last week of January 2003. Reconnaissance visits were made in the Nilgiri North Forest Division, which holds the potential hornbill habitats in Nilgiri District. About 50 km was covered through a variety of habitats such as semi-evergreen and moist-deciduous forests, coffee and tea plantations. One active nest of the Great Pied Hornbill could be located in the Konakarai Slopes Reserve Forest on a wild Mango tree *Mangifera indica*. Midden collections were made from the nest site and the fruit species identified. It shows that, the Great Pied Hornbill has utilized seven fruit species, *Actinodaphne malabarica* (Lauraceae), *Canarium strictum* (Burseraceae), *Olea dioica* (Oleaceae), *Sterculia guttata* (Sterculiaceae), *Maesopsis eminii* (Rhamnaceae) and two species of figs (*Ficus* spp). Further observations on habitat characteristics, food plant availability and breeding season diet are underway.



Sterculia guttata, Great Pied Hornbill's breeding season food in the Nilgiri hills

Photo: P. Balasubramanian

Principal Investigator :
P. Balasubramanian
Project staff :
B. Maheswaran
Duration:
Six months
(January-June 2003)
Funding Source:
SACON R & D funds
Budget :
Rs. 40,000/-
Status:
Ongoing

8. Hornbill-tree interactions with special reference to identification and conservation of keystone mutualists in the Nilgiri Biosphere Reserve

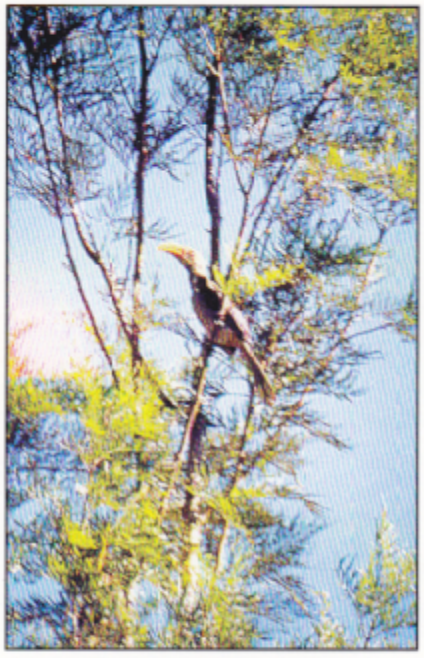
Hornbills interact with a variety of tree species for feeding and nesting because of their frugivorous and unique breeding habits. Hornbills are known as "mobile links" in the forest ecosystem due to their role in the regeneration of various forest tree species. Although four species of hornbills occur in Western Ghats, systematic studies on hornbill-tree interactions are only a few. Hence, the present study.

OBJECTIVES

- Document frugivory by hornbills and identify the tree species that are primarily dispersed by hornbills.
- Study the fruiting phenology of bird-dispersed trees and to find out the keystone species that support hornbills during lean and breeding season.
- Document human threats to the food and nesting trees of hornbills.

Brief highlights of the achievements are as follows:

1. Survey on the status and distribution of hornbills in Tamil Nadu part of the Nilgiri Biosphere Reserve revealed the occurrence of three species. A good



Malabar Grey Hornbill in Mudumalai, Western Ghats

Photo: B. Maheswaran

population of the near-threatened Malabar Pied Hornbill was recorded in the riverine forests of Coimbatore Forest Division while a sizeable population of the endemic Malabar Grey Hornbill was recorded in Benne, Mudumalai Wildlife Sanctuary.

2.Fruit utilization and preference by the Malabar Grey Hornbill differed distinctly between breeding and non-breeding seasons. While non-fig fruit species such as *Olea dioica* and *Actinodaphne malabarica* were the preferred diet during breeding season, figs, namely *Ficus drupacea* and *F. tsjakela,* were preferred during the non-breeding season.

3.The Malabar Grey Hornbill enhanced the regeneration of fleshy-fruited species. Seedlings of 19 species belonging to 13 families were recorded at the midden sites.

4.Vegetation analysis in three hectares of the hornbill habitat at Benne showed the occurrence of 1430 trees belonging to 70 species of 38 families. Shannon-Weiner, Simpson and Evenness index showed a decrease in diversity with increase in disturbance.

5. The Malabar Grey Hornbill used a variety of tree species (36 species belonging to 23 families); 24 for food and 16 for nesting. 69% (n=991) of trees in 3 ha. formed food and/or nesting trees for the Malabar Grey Hornbill. *Lagerstroemia microcarpa* (Lythraceae) and two species of *Terminalia* (Combretaceae) together accounted for 80% of the nest trees at the study site.

6. The Girth at Breast Height and height of the nesting tree were 283.13 cm ± 106.06 cm and 35.9 m ± 6.2 m respectively. Observations on the nest fidelity by the Malabar Grey Hornbill revealed that the Large Brown Flying Squirrel and honeybees competed for tree cavities thus affecting fidelity.

7. The role of Malabar Grey Hornbill as a "mobile link" has been established as it aids in the seed dispersal and regeneration of several tree species in the semi-evergreen forest. Figs (*Ficus* spp) hosted the Malabar Grey Hornbill –the "mobile link" during the critical periods, and hence designated as "keystone mutualists".

ABOUT HORNBILLS

- Hornbills (Family: Bucerotidae): frugivorous birds, exclusive to the Old World tropics.
- Fifty-four species of hornbills are known from sub-Saharan Africa, through India, Southeast Asia and Australasia.
- In India, nine species of hornbills are known, of which four species, namely Indian Grey Hornbill, Malabar Grey Hornbill, Malabar Pied Hornbill and Great Pied Hornbill occur in the Western Ghats.
- The Malabar Grey Hornbill is endemic to the Western Ghats.

Principal Investigator:
P. Balasubramanian
Research Fellow:
B. Maheswaran
Duration:
Three Years (1999-2002)
Budget:
Rs. 3.82 Lakhs
Funding agency:
MoE&F, Govt. of India
Status:
Final Report Submitted

9. Database on Indian Ornithology

The project to develop a database on Indian Ornithology was taken up in 2002. A software is developed and being tested with sample data. It is expected to be in use by the end of 2003.

HIGHLIGHTS

- Any information on Indian avifauna can be accessed easily.
- Database will be accessible for licensed users

Avifauna of the Indian Subcontinent	
No.of Species	1212
Endemic species	75
Endemics restricted to India	39
Threatened Species	75
Data Deficient species	2
Conservation Dependent species	1
Near Threatened Species	52

Endemic Bird Areas and Endemic Birds in India

S.No	Endemic Bird Areas	En	Th. En	NTh. En
1	Andaman & Nicobar Islands	19	6	9
2	Western Ghats	16	4	4
3	Western Himalayas	11	4	—
4	Eastern Himalayas	22	7	3
5	Assam Plains	3	3	—
6	Southern Tibet	2	—	2
	Secondary areas			
1	Eastern Andhra Pradesh	1	1	—
2	Southern Deccan Plateau	1	1	—
3	Indus Plains	1	—	—
4	Central Indian Forests	1	1	—
5	Northern Myanmar Lowlands	1	—	1

En=Endemic; Th. En=Threatened endemic;
NTh.En=Near Threatened endemic

(Source: Threatened Birds of Asia & Endemic Bird Areas of the World. BirdLife International)

Principal Investigators:
Lalitha Vijayan
V.S. Vijayan
Consultant:
P. Sastry
Budget:
Rs.1 lakh/Yr
Funding Source:
SACON R&D fund
Status:
Ongoing



Gulls: Lakhota lake, Jamnagar
Photo: S. Muralidharan

II. MAN AND BIODIVERSITY CONSERVATION

Man has been living in harmony with nature since time immemorial. This harmony has been disrupted since human population started increasing and the demand on biological resources became manifold. Gradually the relationship between Man and nature became a destructive proposition leading to habitat loss (estimated at 0.6% per year in the tropics) and fragmentation, overharvesting of wild populations, chemical pollution, introduction of species and, lately, climatic changes; all posing threats to the biodiversity and thus, to the very survival of Man. It is in this context that the Convention of Biological Diversity made it mandatory for all countries to make a systematic assessment of the impacts of these threats on ecosystems and species in order to prioritize them for conservation action. It has thus become a major area of research interest of SACON.

Under this thrust area, we focussed on environmental contamination and habitat alterations on biodiversity and also projects related to conservation issues.

a. Environmental contamination & biodiversity

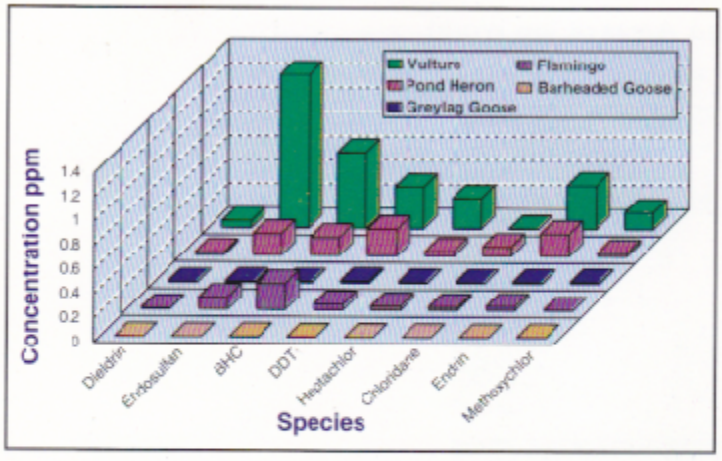
10. Monitoring of environmental contaminants in Indian avifauna

OBJECTIVE

- Monitor the levels of pesticides and metals in the Indian Avifauna on a regular basis.

Since 1999, SACON has been monitoring the levels of heavy metals and pesticides in the tissues of birds. Samples (dead birds) have been received from various parts of the country for analyses. Bird watchers, forest officials and naturalists all over the country have been of great help in getting the samples.

Sixty seven dead birds belonging to 32 species were received from various parts of the country during 2002-2003. Notable among them are the Peacock, Green-billed Malkoha, Night Heron, Grey-headed Myna, Flamingo and White-backed Vulture. In many of the tissues analyzed, several banned or restricted persistent organochlorine pesticide residues have been detected although the levels are not indicative of toxicity. The levels varied among the species. For example, the level of endosulfan was quite high in the White-backed Vulture than that in the other species.



Variation in organochlorine pesticide residues among various species of birds (2002-2003)

Levels of certain heavy metals were also measured in the tissues. Presence of lead as high as 12 ppm in the femur of White-backed Vulture is indicative of chronic exposure. Levels of DDT and endosulfan in the tissues

of Pond Heron received from Tamil Nadu were higher than in other species of birds received from elsewhere in the country.

Principal Investigator:
S. Muralidharan
Project personnel:
K. Sankardoss
Duration:
Long-term
Budget (annual):
Rs.1.25 lakhs
Funding agency:
SACON R&D funds

It may be noted that impacts of pesticides, heavy metals or any other contaminant on birds need not always be mortality. It could as well lead to several adverse effects such as decreased fertility and hatching success, embryonic malformations and behavioral anomalies in breeding adult birds, and several physiological disturbances leading to population decline in the long-run.

11. Persistent elemental contaminants in a few species of fish-eating birds in Coimbatore during 2003

Fish-eating birds, because of their position in an aquatic food chain, are expected to reflect the contamination of the aquatic system, especially when they are resident. Hence, a study was conducted exclusively on three species of fish-eating birds, namely the Pond Heron, Grey Heron and Little Cormorant.

Accumulation of copper, lead and zinc varied among the species and tissues. All the metals had high concentration in femur (Cu 4.31 ppm; Zn 78.37 ppm and Pb 11.29 ppm) than other tissues. The Grey Heron suffered the maximum metal burden followed by the Pond Heron and Little Cormorant.

Exceptional values of zinc (113.63 ppm) and lead (12.28 ppm) are recorded in the femur of Pond Heron, indicative of toxicity. However, it may require further confirmation.

Project Investigator:
S. Muralidharan
Project Personnel:
B. Sivasathya
R. Jayakumar
Duration:
Three months (Short term)
Budget:
Rs. 10,000/-
Funding agency:
SACON R & D
Status:
Completed

12. Residues of endosulfan in vegetables and impact of its usage on the avifauna of an agro ecosystem

Extensive and indiscriminant use of pesticides on vegetables has been of insidious problem to human beings and also to birds directly or indirectly. Hence, a three month study was carried out to assess the residues in the vegetables, namely tomato and beans and also to assess the impact on the avifauna.

OBJECTIVES

- Assess the levels of endosulfan in beans and tomato.
- Impact of the application of endosulfan on birds.

Samples of tomatoes and beans were collected from the field subsequent to pesticide application from 1st to 20th day at five-day interval and analyzed for endosulfan isomers, namely α and β, and its metabolite, endosulfan sulfate.



Where does the pesticide move from vegetables?

Photo: S. Muralidharan

Bird surveys were also conducted to assess the bird population during the course of study. Between the two vegetables, endosulfan residues were higher in beans (0.183) than in tomatoes (0.002 ppm) on the first day after application. The residue levels of endosulfan exhibited a sharp decline from its first day to 20th day of application. The reduction rate was 96% in tomatoes and 99% in beans.

Levels of endosulfan in the samples collected from the market were compared with the levels recorded in the study plots. Concentration in tomatoes (0.001 ppm) and beans (0.002 ppm) fell within the residue levels recorded in the field samples collected between five and ten days after the pesticide application. Further the levels recorded in the current study, both from field and market samples, are below the limits prescribed by WHO for human safety.

Principal Investigator:
S. Muralidharan
Project Personnel:
R. Rajendran
V. Dhananjayan
Duration:
3 months (short term)
Budget:
Rs. 10,000/-
Funding agency:
SACON R & D
Status:
Completed

Number of birds and species in the study plot decreased with the decrease in vegetation cover towards the end of the harvesting period. During the initial counts, 210 birds comprising 20 species were recorded when the vegetation cover was 69%. It decreased to 128 birds comprising 15 species towards the end of the study when the vegetation cover was reduced to 22%. Although birds were attracted towards the field after pesticide application, impact on the avian community is not clear from the limited period of study.

13. Physiological effects of air pollution on birds in urban environment

- Birds (Sparrow, Pigeon, House Crow and select wetland species) from selected areas that are decided based on existing air pollution data would be collected as samples for study.

OBJECTIVES

- Detect the level of pollutants in birds by biochemical analysis.
- Assess the concentration of hazardous substances and gases in the environment of select localities.
- Perform histopathological test for pollutants in birds.
- Survey biomarkers such as detoxifying enzyme systems, and metallothioneins.
- Examine the haematological parameters in birds living in habitats with various levels of air pollutants.

- Air quality at corresponding places would be reassessed by standard methods (high volume samplers).
- Organic compounds and heavy metals which are associated with air pollutants in birds would be quantified using GC and AAS respectively.

- Biochemical analysis would be done to determine levels of enzymes of certain groups that are known as important in detoxification.
- Histopathological tests would be carried out for physiological responses due to contaminants.
- For haematological parameters standard haematological parameters will be examined using standard methods.
- Micronuclei (MN) and erythrocytic nuclear abnormalities (ENA) test would be carried out to measure genotoxicity due to pollutants.

We have applied for permission from the forest department for collecting birds. An exhaustive review of literature and techniques was conducted and review papers are being prepared. The actual fieldwork will start after obtaining permission from the authorities and standardizing laboratory methods.

Investigator:
P.A. Azeez &
R. Mohanraj
Research Fellow:
V. Gayathri
Duration:
2 years
Budget for first year:
Rs. 1,20,000/-
Funding agency:
SACON R & D
Status:
Ongoing

14. Study on attenuated background radiation on haematology of select bird species

- The air, soil and water samples from the area would be measured using appropriate standard methods.
- The haematological changes (total blood count, RBC count, WBC count, Platelets) would be measured using commonly used appropriate techniques that are modified to suit birds.
- Hormonal imbalance and change in enzyme activity would be measured using suitable techniques.
- Chromosomal aberrations, micronuclei, DNA strand breaks, apoptosis would be studied by standard procedures.

OBJECTIVES

- Survey birds in the already known high radiation areas and, in areas with possible sources of high radiation.
- Collect published data on background radiation in these areas.
- Detect the haematological changes in birds.
- Assess the changes in enzymes and hormones.
- Evaluate genetic damages in birds.

We have completed an extensive review of literature and techniques, and identified the techniques for analysis that need to be standardized under laboratory conditions. Two review papers are being prepared. Permission of the forest department to collect a few birds is awaited. Fieldwork and laboratory studies would commence on receipt of the same.

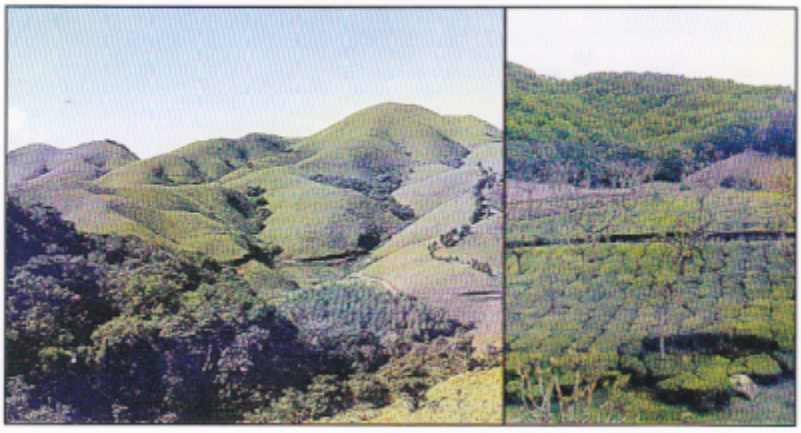
Investigator:
P.A. Azeez
Research Fellow:
A. Hema
Duration:
2 years
Budget for first year:
Rs. 1,20,000/-
Funding agency:
SACON R&D
Status:
Ongoing

b. Habitat fragmentation and biodiversity

15. Impact of habitat alterations on the reptile diversity in the higher altitudes of the Nilgiri Biosphere Reserve, Western Ghats

OBJECTIVES

- Determine the distribution and abundance of reptiles in various natural and man modified habitats occurring in the higher altitudes of the Nilgiri Biosphere Reserve.
- Quantify the impact of habitat alteration on reptiles in terms of their distribution and abundance.
- Collect baseline ecological information such as the habitat requirements by various species of reptiles.



Undisturbed Shola forest | Tea plantation

Photos: S. Bhupathy



Salea horsfieldii, an endemic lizard restricted to the shola and grassland

Photo: S. Bhupathy

This project was initiated during May 1999 and the field work is completed.

Time Constrained Visual Encounter Survey and quadrat sampling were used for data quantification on monthly basis. A total of 17.03 ha (Grassland – 5 ha, Shola - 2.03 ha, Tea - 4.56 ha, Wattle - 5.37 ha) was sampled during the study period in Mukuruthi National Park and adjoining areas. Visual encounter surveys were conducted for 406 hours (Grassland – 78 hrs, Shola – 130 hrs, Tea - 120 hrs and Wattle - 78 hrs).

The major findings are given below:

- Eleven species of reptiles were recorded (gecko-1, shink-1, agamid-2 and snake - 7). Three snake species (Indian Rat Snake, Checkered Keelback Water Snake, and Narrow-headed Snake) which are found in lower altitudes, are invading to higher altitudes of Nilgiris. Only eight species (snakes - 5, agamid-1, skink-1, gecko-1 species) of reptiles were recorded during April 2001 to October 2002 in Mukuruthi National Park. All these eight species are endemic to the Western Ghats.

- Species richness and density of the reptiles are the highest in Grassland and lowest in Shola (natural habitat). Again, both are less in wattle and tea (man-made habitats). Seven species are found in natural habitats. It appears that the Checkered keelback (*Xenochropis piscator*), Dhaman (*Ptyas mucosus*) and Narrow-headed Snake (*Xylophis*

perroteti) are invading into higher altitude through plantations and human activities.

- Species such as Nilgiri Salea lizard (*Salea horsfieldi*) prefer edges of shola and grassland. About 90% of this species was found along the edges or ecotone of the Grasslands and Shola forests. This indicates the importance of intact Montane shola and Grasslands for the conservation of endemic species.
- Analysis shows that dry season (November to April) is ideal for reptile sampling in higher altitude, as they are more active during that period.
- Amphibians of three families, namely Rhacophoridae, Ranidae and Bufonidae were recorded.

Principal Investigator:
S Bhupathy
Research Fellow:
A Nixon
Budget:
Rs. 4,00,300/-
Source:
MoEF (BR Programme)
Duration:
3 years (Initiation May 1999)
Status:
Fieldwork completed; Report is being finalised

Further analysis and report preparation are in progress.

C. Conservation

16. "Sthalavriksha" practice in conservation of plant biodiversity in Tamil Nadu

OBJECTIVES

- Conduct a taxonomic survey of "sthalavrikshas" and bring out an authentic list of "sthalavrikshas" in Tamil Nadu.
- Document the religious background and cultural practices associated with "sthalavrikshas".
- Assess the ecological importance and conservation values of "sthalavrikshas".

A plant that is venerated from time immemorial, by the devotees of ancient Tamil culture, as holy as the prime deity of the temple, is termed as "sthalavriksha". This worship is popular since ancient Tamil tradition and is being followed even now. This religious sentiment play a vital role in conservation of certain plant species belonging to this part of the country. Although the medicinal and mythological importance of "sthalavriksha" are recorded, taxonomical identification and conservation value of the plant biodiversity involved in this unique practice are yet to be examined. Hence, the present project is initiated.



Butea monosperma, "sthalavriksham" in a Shiva temple in Tamil Nadu

Photo: P. Balasubramanian

Highlights

A thorough review of the literature was done. Temples were surveyed to collect the specimens of "sthalavriksha" species and to document cultural

practices and religious faiths associated with the worship of "sthalavrikshas". Collection of data from the temples was made by using a specially designed questionnaire, prepared in consultation with experienced scholars including historians, archeologists, conservationists, anthropologists and temple priests. Taxonomical identification of "sthalavrikshas" was carried out following usual methods. Sample specimens were collected and herbarium prepared.

Fifty six temples in Nagapattinam and Thiruvarur districts of Tamil Nadu were surveyed and herbarium specimens collected. On the basis of the above preliminary surveys, questionnaire was modified to cover multidisciplinary aspects for future surveys. Intensive survey was undertaken in 44 temples in the districts of Coimbatore, Erode, and Kanyakumari.

Of the 100 temples surveyed during both the preliminary and intensive surveys, "sthalavrikshas" were found in 92 temples. Of the 92 "sthalavrikshas", four could not be identified. The 88 identified specimens belong to 36 species of 21 families. This includes 32 dicot species of 18 families, and four monocot species of three families. In two temples, dead trees preserved in the form of wood is being worshipped. Among the families, Caesalpiniaceae with four species contributed to the maximum "sthalavriksha" species. One species *Aegle marmelos*, was represented in 26 temples out of the 100 temples surveyed, followed by *Ficus religiosa* in eight temples. Majority (91%) of the "sthalavriksha" species are trees, followed by stragglers and a perennial grass species. Religious values and cultural practices associated with the "sthalavrikshas" were also gathered for several species. Further surveys are under way to cover remaining temples of the state.

Research student:
M. Gunasekaran
Principal Investigator:
P. Balasubramanian
Funding source:
Own (student)
Status:
Ongoing

At the moment, the research student is working on his own. A project has been submitted to the Ministry of Human Resources, Govt. of India for funding for two years.

17. People's Biodiversity Register for the fringe area panchayats of Nilgiri Biosphere Reserve (NBR)

The present project is a pilot study conducted in a panchayat (24,Veerapandy).

OBJECTIVE

- Develop People's Biodiversity Register (PBR) for selected Panchayats on the fringe area of NBR through a collaborative programme of local schools, colleges, scientists and villagers.

Preparation of PBR involves steps such as people's mapping of their landscape and resources, individual and household interviews, user-group discussions, interactions at the gramasabha and panchayats, and surveys.

These steps bring down the conservation issues to tribals, other local people, scientists, administrators and teachers and students of schools and colleges. Such a process help work out locally feasible conservation measures and action plan.



Tribals at Dhumanur village

Photo: P. Pramod

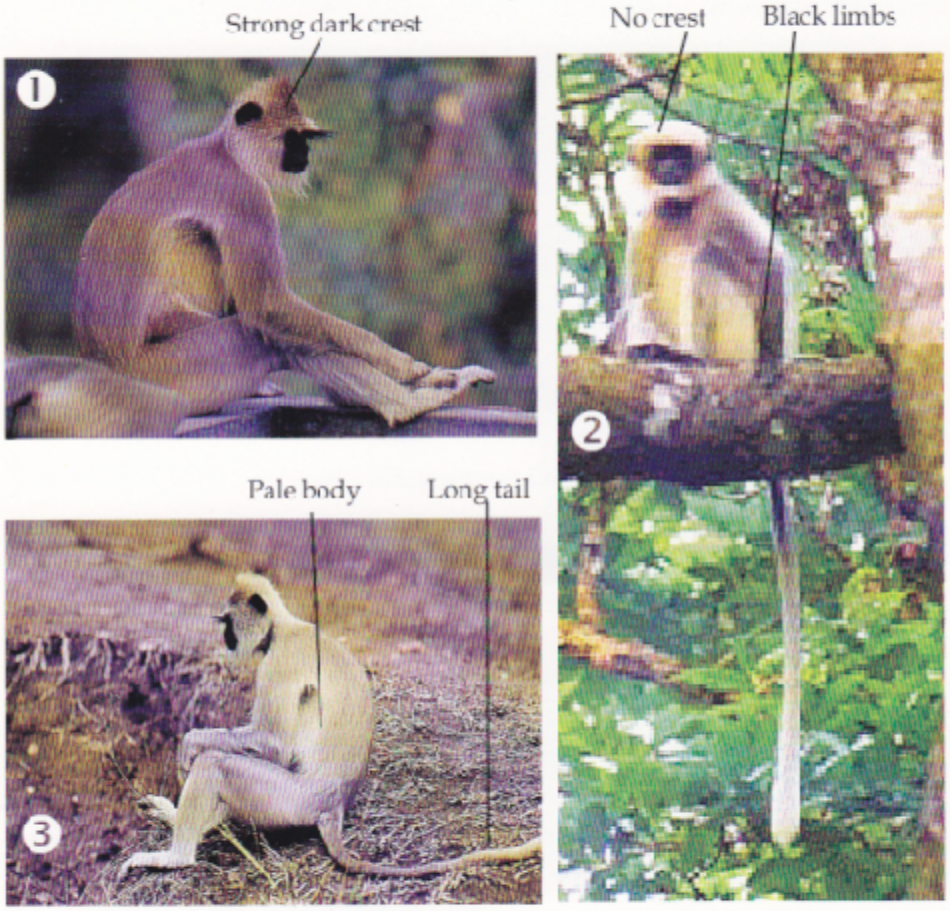
The present project covered 21 village hamlets and discussions were held with 256 inhabitants. 126 villagers actively helped in documenting the village knowledge on biodiversity. The villagers listed 337 plants and claim that they could identify all of them and that they know the areas of their occurrence. Their list includes 56 species of leaf vegetables, 35 species of grasses, 22 species of tubers, 16 species of mushrooms, 57 species of other vegetables and 60 species of fruits that can be consumed. However, many of these are not in use presently. Most of the significant knowledge is confined to the elders.

Of the 337 species listed, 102 have medicinal properties while 46 are being used for some rituals in their black magic. The ladies recognized another 42 plants for various minor household uses and also they consider some 23 species as nuisance plants. Among animals, 43 species of mammals, 92 species of birds, 18 species of fishes, 62 groups of arthropods (in their own classification), and 37 species of reptiles were reported. They also named 22 animal species with some medicinal value.

Principal Investigator:
P. Pramod
Research Fellow:
K. Moorthy
Duration:
3 Years
(present pilot study is for one year)
Commencement:
22 March 2002
Budget:
Rs. 75,000/- (for one year)
Funding agency:
SACON R&D Funds
Status:
Report in the final draft

18. The comparative ecology of langurs of the genus *Semnopithecus* in south India

One aspect that is rarely considered in the conservation of biodiversity is the variety of adaptations that individual species shows to different habitats. The common langur *Semnopithecus entellus* is a typical example. It is one of the most widely distributed non-human primates, occurring from the coast to the high altitudes in Himalaya, and in such varied habitats as semi-arid scrub forest, rainforest and pine forest. It shows an amazing variety of adaptations to these varied habitats which is reflected in its social organisation, food selection, demography and behaviour. Of late, taxonomists are paying increasing attention to such bewildering array of adaptations that individual species show to the habitat in which it lives. A recent revision of primate taxonomy, for example, has split the erstwhile Common Langur (*S.entellus*) into seven species on



1. The Tufted Gray Langur *Semnopithecus priam* in Chinnar Wildlife Sanctuary in Kerala.
2. Most likely the Black-footed Gray Langur *S. hypoleucos* in Someswara Wildlife Sanctuary, although it is reported to occur only in southern Coorg district in Karnataka.
3. The Southern Plains Gray Langur *S. dussumieri* in Mudumalai Wildlife Sanctuary, which closely resembles *S.priam*.

Photos: Ajith Kumar

phylogeographic considerations, raising subspecies to species level. This taxonomy gives us an opportunity for conservation of common langur in all its diversity that we see across India.

The present project aims to study the comparative ecology and conservation requirements of the three newly designated species in south India; the Tufted Gray Langur (*S.priam*) occurring in Sri Lanka, Tamil Nadu, and Kerala; the Southern Plains Gray Langur (*S.dussumieri*) occurring primarily in the Deccan plateau; and the Black-footed Gray Langur (*S.hypoleucos*) confined to southern Coorg district in Karnataka. The last of these is perhaps the most endangered non-human primate in India, if the revised taxonomy is widely accepted, being confined to a few tens of sq km of rainforest in Brahmagiri Wildlife Sanctuary and Makut Forest Division. These three species vary considerably in the vegetation types that they occupy, social organisation, demography and feeding ecology. The conservation requirements of these three species are also likely to be equally different.

As a part of this recently initiated project, comparative studies would be conducted on these newly designated species in three localities in order to identify differences among them in ecological and behavioural adaptations, as well as conservation requirements.

Principal Investigator:
Ajith Kumar
Research Fellow:
Abdul Riyas, K.
Duration:
2002-2005
Funding agency:
CSIR
Status:
Ongoing

III. ECOSYSTEM STRUCTURE AND FUNCTION

It is increasingly evident that a proper understanding of the patterns and process that govern the ecosystem is vital for formulating long-term conservation programmes. Realizing the difficulties to have large manpower and huge financial commitment for total ecosystem studies, it has been decided to concentrate on key issues in minute details, which would provide a reasonable understanding of the system.

SACON campus which is a degraded deciduous forest and which has been offered partial protection from grazing has been taken up for a long-term study of terrestrial system while Keoladeo National has been taken up for wetland ecosystem. Teesta river basin in Sikkim has been taken up for studying some of the key elements of the ecosystem.

19. Biodiversity monitoring of Anaikatty Reserve Forest - a long-term study on the ecology of a dry mixed deciduous forest

The SACON campus was originally a dry mixed deciduous forest contiguous with the similar forests at low elevation hills around. It was a private land; the trees were lopped and removed, the land was mined for loamy soil to make bricks. Grass and shrubs were exposed to excessive grazing by livestock prior to SACON's aquisition of the land. The vegetation is dominated by thorny shrubs and herbs.

The protection we offered to the land from livestock grazing since 1998 and our tree planting schemes (10,000 plants in 1999) have produced discernible greenery in the area. wild elephants which were not sighted earlier, started visiting the campus – thanks to the water source we provided.

Sparrows which were not seen in the campus since 1994 (ever since we took over the land) started appearing since the last three years. It is interesting to note how do they get established in the area and at what cost. Will they displace some other species?

The situation offers a unique opportunity to SACON biologists to make long-term studies

LONG-TERM OBJECTIVES

- The physical environment of the campus and its changes over a period of time in relation to the biotic changes and the interplay between the two.
- The seasonal rhythms of each plant species and even individuals in its production of leaves, flower and fruits and factors determining the same.
- The influence of pollinators and seed dispersal on the above rhythms of plants.
- The seasonal rhythms of life cycle of the pollination and seed dispersal agents, especially insects and birds with emphasis on the breeding seasonality of birds.
- The ecological adaptations for breeding in birds.
- The population growth of individual species and the determining factors, and a variety of topics which would open up vistas to the amazing world of evolutionary ecology.

on the changes in the ecosystem, the ecological processes and functions. Documenting the biodiversity, at least the major taxa as of today, monitoring of the same on a long-term basis, the role of environmental parameters in the same, interrelationship among species and communities, evolutionary forces that are in operation are all some of the areas of great academic and applied interests.

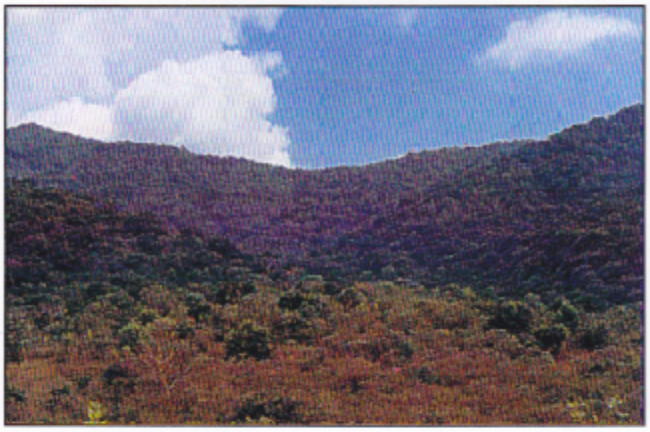
Avifauna

Bird census was conducted following variable-width line transect method. Data are being collected from four transects of one km each.

OBJECTIVES

- Collect baseline information on the avifauna of the campus and surrounding areas.
- Intensive studies on selected species of birds on a long-term basis.
- Prepare a map (one meter resolution) showing the exact position of bird nest and nest distribution.
- Document microhabitat utilization of individual species of birds.

One hundred and fifty seven species of birds were recorded in the study area during June 2001 to March 2003. Interesting among them are the Nilgiri Wood Pigeon, Rusty-Tailed Flycatcher, Blue-Capped Rock Thrush, and Booted Eagle. Four endemic birds were observed namely, the Greyheaded Bulbul, Bluewinged Parakeet, White-bellied Blue Flycatcher, and Rufous Babbler. 12 species of birds of prey were recorded inside the SACON Campus.



Anaikatty Reserve Forest

Photo: Sr. T. Nirmala

Birds of Prey at Anaikatty

1. Black-shouldered Kite	*Elanus caeruleus*
2. Black Kite	*Milvus migrans*
3. Brahminy Kite	*Haliastur indus*
4. Short-toed Snake Eagle	*Circaetus gallicus*
5. Black Eagle	*Ictinaetus malayensis*
6. Crested Serpent Eagle	*Spilornis cheela*
7. Eurasian Marsh Harrier	*Circus aeruginosus*
8. Pallid Harrier	*Circus macrourus*
9. Crested Goshawk	*Accipiter trivirgatus*
10. Shikra	*Accipiter badius*
11. Oriental Honey-Buzzard	*Pernis ptilorhynchos*
12. Booted Eagle	*Hieraetus pennatus*

Nest search was made inside the campus as well as in adjacent forest areas. 262 nests of 30 species were recorded from April 2002 to March 2003. The Golden Oriole, Indian Scimitar Babbler and Emerald Dove were observed breeding inside Anaikatty Reserve Forest, although occasionally.

Three species, namely the White-headed Babbler (group-living), Indian Robin (solitary) and House Sparrow (partially flocking) were selected for intensive studies, especially for monitoring population dynamics, breeding biology and life history pattern on a long-term basis.



Indian Robin

Thirty four nests of the White-headed Babbler, 13 nests of House Sparrow and 57 nests of Indian Robin were observed between April 2002 and March 2003. Foraging was mainly by ground gleaning by the White-headed Babbler and Indian Robin. Occasionally the White-headed Babbler fed on *Lantana* and *Opuntia* fruits and caterpillar. The White-headed Babbler once preyed upon a gecko, but the particular individual did not share it with any of the flock members.

The Indian Robin did not nest after rains, but resumed territorial activities in January and nesting in February, It could be due to the increased day length during February. Incubation, food provisioning and time budget were also studied in the Indian Robin. Peak in the nest attentiveness varied according to the time of the day; 100% between 14.00 hr and 15.00 hr, 95% between 06.00 hr and 07.00 hr and 81% between 07.00 hr and 08.00 hr. The male fed the female during incubation. Peak of food provisioning was observed between 06.00 hr and 07.00 hr and 17.00 hrs and 18.00 hr. Feather development of hatchlings started after the 5th day. Territory of the species was marked using GPS. The size of the territory varied from @ 0.55 ha to 1.71 ha. The habitat was not saturated, because we observed an increase in the number of territories in the last two years; 25 territories in 2001, 30 in 2002, and 37 in 2003. Maximum three broods and five renesting attempts were observed in the Indian Robin. Annual productivity was 2.23 per pair during 2002. Young male Robin developed black plumage within six months in two cases.

In the Whiteheaded Babbler, group-splitting and forming new group, chasing and killing the approaching new member, change of the roost site during the breeding and brooding by group members were observed. Roosting site varied from low bushes to trees.

Bird Banding Programme

One of the major activities of the campus project is banding the birds for studying the local movement, migration, annual recruitment of each species and monitoring the population on a long-term basis. Apart from the target species whose details are given in the table, all the birds caught in the mist net were ringed.



White-headed Babbler

Birds ringed between April 2002 and March 2003

Total birds ringed : 654 Total no. of Species : 53

Species Name	Total	Nestling	Recaptured
Whiteheaded Babbler	62	14	12
House Sparrow	85	21	22
Indian Robin	66	44	4

Recovery rate : 9% (including the nestling ringed at the nest)

Winter migrants such as the Blyths Reed Warbler, Tickells Leaf Warbler, Greenish Warbler, Indian Great Reed Warbler, Brown Shrike, Blue-Capped Rock Thrush, Common Rose Finch and Barn Swallow and local migrants such as Rufous-backed Shrike, Grey-headed Bulbul, Brahminy Myna, Common Wood Shrike and Black Bird were also ringed.

Insects

Objectives of this programme is to investigate the changes in insect community in the different microhabitats available in the SACON Campus and surrounding landscape with a special emphasis to butterfly populations.

The present study has been designed to explore the taxonomic and functional diversity of insects in the selected landscape within the SACON campus and the surrounding area. The studies were initiated with butterflies as focal taxa in a taxonomic stand point. General insect diversity is also being monitored through a set of insect sampling methods. Data on butterflies are being collected with transect count and sweep nets. Abiotic factors affecting the insect community is also being studied.

1. Seventy five species of butterflies belonging to five different families were recorded. Total number of butterflies recorded are 15,317.
2. Butterfly community in the Anaikatty forest habitat is pierid dominant. The dominant species are Common Gull (*Cepora nerissa* Fabricius), followed by White Orange Tip (*Ixias marianne* Cramer), Yellow Orange Tip (*Ixias pyrene* Linnaeus) and Mottled Emigrant (*Catopsilia pyranthe* Linnaeus).
3. Over 5,000 individuals of insects have been recorded through various methods, namely pitfall (69%), beating sheet (22%) and sweeping (9%). The family associations of insects are being studied.



Mud puddling of butterflies: Common Gull and Mottled Emigrant

Photo: R. Eswaran

Herpetofauna

Salient findings of the study conducted from April 2002 to March 2003 are given below.

1. In all, 42 species of herpetofauna ; 37 reptiles and 5 amphibians were observed, which include 20 species of snakes. Analysis of species accumulation indicates the occurrence of about 60 species.
2. Among the 37 species of reptiles observed, the following communities were observed; terrestrial (55%), arboreal (31%), subterranean (7%) and aquatic (7% species).
3. Among the reptiles species observed, about 45% was nocturnal and, 46% diurnal, while 9% was active, both day and night.
4. Activity peaks of reptiles and amphibians are highly seasonal; larger number of them were observed during monsoon.
5. Studies on the microhabitat use, and population of select species are in progress.

OBJECTIVES

- Determine the distribution and abundance of herpetofauna in Anaikatty hills.
- Study the ecology of select species of herpetofauna.

Principal Investigator:
V.S. Vijayan
Co-Investigators:
Lalitha Vijayan, S.N. Prasad, S. Bhupathy and P. Pramod
Research Fellows:
S.P. Sankar, R. Eswaran and Debanik Mukherjee
Duration:
May 2001 to April 2004
Budget:
Rs. 22 lakhs
Funding agency:
SACON R&D funds
Status:
Ongoing







1. Common Bridal Snake *Dryocalamus nympha* 2. Bamboo Pit Viper *Trimoresurus gramineus* 3. Green Calotes *Calotes calotes*

Photos: S.Bhupathy

20. Monitoring of Keoladeo National Park Ecosystem

Principal Investigators:
V S Vijayan, Lalitha Vijayan, P A Azeez, S. Muralidharan, S. Bhupathy & S N Prasad

Project Officer:
M. Shah Hussain

Junior Research Fellows:
Amlan Dutta, Anjan Kumar Prusty

Project period:
3 years (since January 2003)

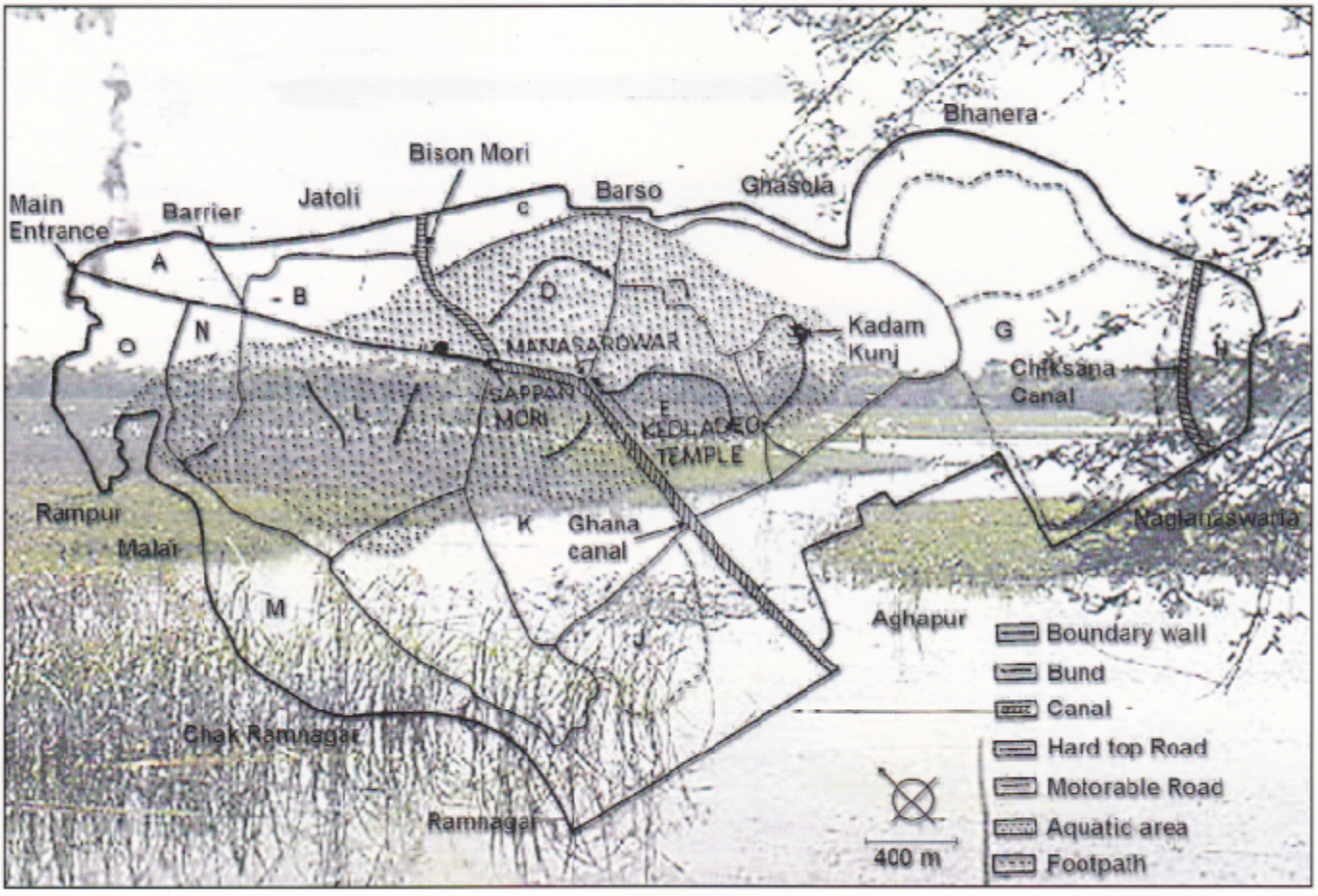
Budget:
Rs.7.44 lakhs

Funding agency:
SACON/MoEF

Status:
Ongoing

The Keoladeo National Park, Bharatpur is the only National Park where a detailed study on the ecosystem was conducted. The salient features of the ecosystem and the management issues were identified during the study conducted from 1981-1991 by the BNHS with the financial support from the US Fish & Wildlife Service. Drastic changes have occurred in the area during the last decade; the aquatic area is being colonized by woodland species and population of the waterfowl declined discernibly. Therefore, it was decided to undertake a long-term monitoring of this World Heritage Site.

A Project Officer and Research Fellows are recruited and trained for conducting studies. The field station is being set up outside the park and sampling of different parameters will be started from June 2003.



Map of Keoladeo National Park

21. Modelling of Keoladeo National Park Ecosystem

The Keoladeo National Park, Bharatpur is a man-made and managed wetland of international importance. It is the only wetland ecosystem in India which was studied intensively covering its structure and function as well as the impacts of natural and man-induced changes on the system. The study was undertaken for 10 years by the Bombay natural History Society with the funding from the U S Fish & Wildlife Service. The BNHS has kindly handed over all the data to SACON for working out the model.

Principal Investigators:
V. S. Vijayan
Lalitha Vijayan
Consultant:
P. Sastry
Budget:
Rs. 1.5 lakhs
Funding Source:
SACON R&D fund
Status:
Ongoing

Many of the scientists engaged in the Keoladeo National Park (KNP) ecosystem study are currently with the SACON. The KNP project covered almost all aspects of the wetland ecosystem (soil & water chemistry, primary productivity, phyto and zoo-plankton, aquatic macrophytes, macroinvertebrates, fishes, waterfowl and mammals, and all abiotic factors). Although a thematic model of the ecosystem was produced, an empirical model could not be tried. This is being tried currently. It is expected to be completed during the next financial year.

22. An ecological study on mammals, birds, herpetofauna and butterflies in Teesta Basin, Sikkim

Among all the Indian states, Sikkim is undoubtedly the richest in biodiversity relative to its geographical area. For example, although Sikkim is only one twentieth of the Western Ghats in geographical area, it has far more species of mammals, birds, and butterflies than in the Western Ghats. The flora is also equally diverse at species and higher taxonomic levels, in habit and the associations that they form; orchids being a well known example. This breathtaking diversity results from the geographical location of the state (where several biogeographic realms overlap), and an altitudinal and climatic regime that is unique in the world. That much of the biodiversity remain today is undoubtedly due to the low human population densities as well as to the biodiversity dependent and diverse human life style.

OBJECTIVES

Major objective

- Make an assessment of the diversity of mammals, birds, herpetofauna and butterflies in Teesta River Basin in Sikkim.

Specific objectives

- Gather primary information on the distribution, abundance and ecology of the target taxa in major vegetation types.
- Identify the impacts of various human activities on the above taxa, and major threats.
- Identify areas of high or unique biodiversity values.
- Suggest measures for management of biodiversity inside and outside protected areas.
- Develop local expertise in biodiversity research and monitoring.



Teesta river and the forests in Sikkim

Photo: Ajith Kumar

A species inventory of the target taxa in Sikkim was compiled from various sources, along with geographical localities, vegetation type and altitudinal ranges. This database currently includes about 1500 species. An analysis of these data shows that the overall species richness is the highest in the altitudinal range of 1800 m to 2800 m. However, peak species richness with reference to altitude varies among the four taxa. Birds and mammals show relatively high species richness even in higher altitudes, with exclusive community assemblages. The data currently available are based on surveys done decades ago, which are highly biased in terms of altitudinal, geographic and taxonomic coverage.

From November 2002 to March 2003, an agro-forestry landscape in Dalep Busty in South Sikkim (N27° 14.654', E88° 28.088'), at an altitude of about 500 m on the banks of River Teesta was studied. Attempts were made to assess biodiversity in a human dominated and privately owned agro-forestry landscape, an important objective of the project. The study methods included transect surveys, micro-habitat searches, photo-traps, and opportunistic records.

Eleven species of mammals have been recorded from here. Except for the Hoarybellied Squirrel and murid Rodents, the sightings of other animals have been very few, partly at least because of the winter which covered most of the study period. The same is the case with herpetofauna, with 11 species recorded till now. Nearly 100 species of birds and 128 species of butterflies have been recorded, their abundance as well as species richness declined in winter compared to pre-winter. However, during this short period of study, nearly 50% of birds and 30% of butterflies reported earlier from the altitudes <900 m have been recorded. The conservation importance of agro-forestry landscape at low altitude is thus evident, especially since there are no protected areas in this altitude zone where the loss of forest has been the most severe. The current land use in this zone consists primarily of small patches of original forest, a variety of seasonal crops grown with very little use of agro-chemicals, and the retention of several species of native trees in agricultural fields. This land use is very conducive to the retention of native fauna.



Chestnut Crowned Laughing Thrush in Sikkim

Photo: Ajith Kumar

Several patches of original vegetation still remain along the steep slopes of the Teesta basin at low altitudes. These low altitude forests are the habitats of several tropical species of small mammals, amphibians and reptiles. These patches of forests therefore require immediate documentation and conservation attention.



Toad, *Bufo* sp. in Sikkim

Photo: Ajith Kumar

Principal Investigators:
Ajith Kumar, Lalitha Vijayan
Investigator:
S.Bhupathy
Research Fellows:
Joya Thapa, Basundhara Chettri
Bhoj Kumar Acharya, Amlan Ganguly
Duration:
2002-2007
Funding agency:
Ministry of Environment & Forests, through Delhi University
Budget:
Rs. 49.7 lacs
Status:
Ongoing

IV. WETLAND CONSERVATION PROGRAMME

The conservation values and the enormous economic potentialities of Indian wetlands have not been realized, although they have been disappearing in an alarming rate. Wetland is a resource, which could be utilized sustainably without loosing its biodiversity values. It is one of the most important habitats for birds; it harbours millions of migratory waterfowl from across the borders and hence, makes it internationally obligatory to protect these waterlogged wealth.

The two major activities of the wetland conservation programme of SACON are: (1) formulation of a national Wetland Protected Area Network and, (2) sustainable utilization and conservation of wetlands.

23. Inland Wetlands of India

The project aims at documenting the biodiversity rich wetlands of India and preparing a Protected Area Network of wetlands covering the inland wetland biodiversity of all the states. The project has two distinct aspects, namely mapping of wetlands for select districts at a scale of 1:50,000 and assessment of the vegetation, fish and



Pelicans at Lakhota wetland in Jamnagar

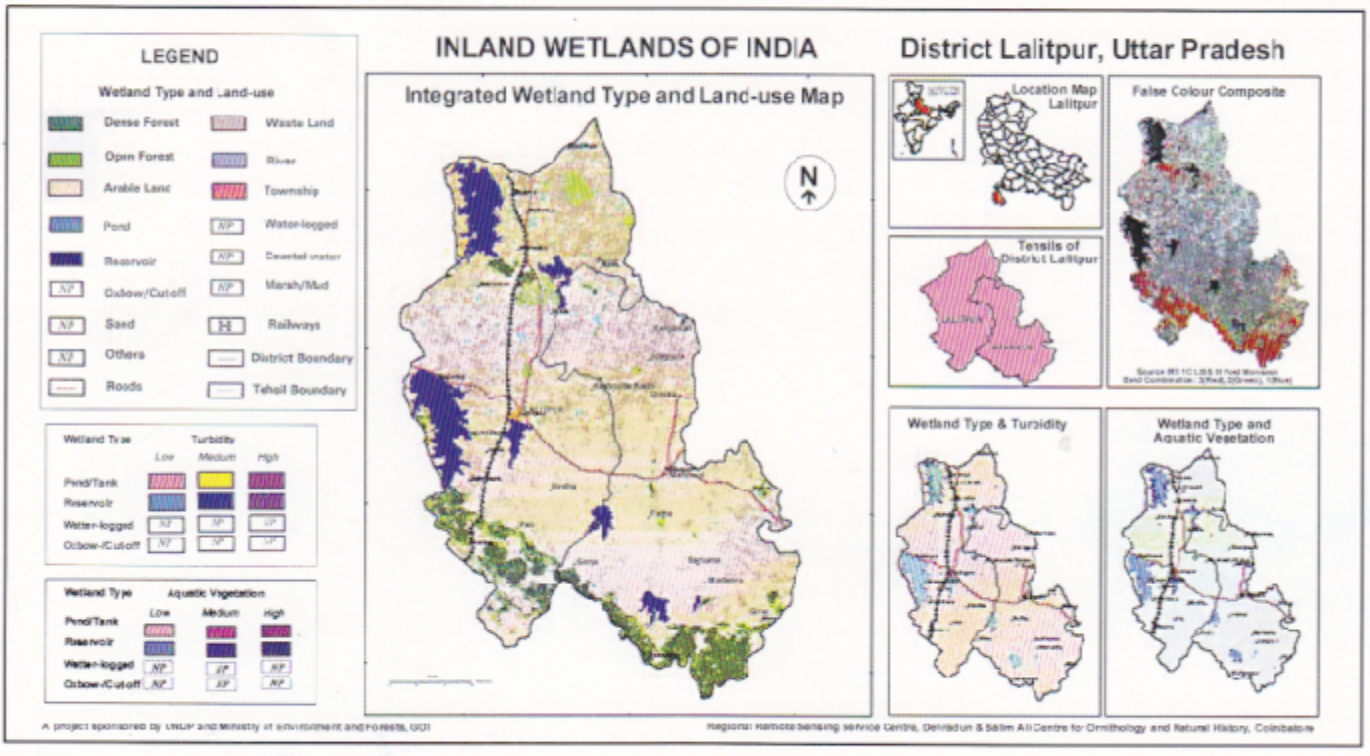
Photo: Lalitha Vijayan

waterfowl, contamination by pesticides and industrial effluents on fish and socioeconomic studies of a few chosen wetlands.

Mapping

The mapping work was conducted by the Regional Remote Sensing Service Centres (RRSSCs) and Maharashtra State Remote Sensing Application Centre, Nagpur (MRSAC) as per the detailed specifications and requirements given by us. The image outputs for all districts were received during June-August 2002 mostly in the form of softcopy. Clarifications and corrections were made for different states; meanwhile work on map composition for soft and hard copy was finalized in close consultations with RRSSC, Dehradun. Production of the maps (hard copy prints) is going on. Value addition on the classified images was done using disparate data. This includes vector inputs of rail, road, and drainage networks using Digital Chart of the World (DCW). In addition, geographical name database from NIMA (National Imagery and Mapping Agency) was used to provide geographical name content for the maps. The maps were composed on 1:5,00,000 scale. Similarly the status of wetlands as given by SAC was created on district basis.

All these products have been produced both in soft and hard copy for dissemination.



The wetland map composed using the satellite (IRS-1C LISS III) image

Field data

Field data collection was conducted in about 520 wetlands in different states during December 2001-February 2002 and in the high altitude areas in Himalayas during May-July 2002. The work was carried out by state coordinators assisted by a team of NGOs, professionals and other stake holders in wetland conservation. More than 600 persons were involved. This is by far the most intensive participatory programme ever taken up in wetland conservation. Data on various aspects, namely birds, vegetation cover, and socioeconomics were collected as decided during the state-level workshops. Data and reports were received from all the states except Bihar and Jammu & Kashmir. All the data are transformed into a format compatible with Arc/Info GIS. Coordinates for all the sites sampled were obtained from the toposheets for mapping.

Wetland contamination

Since fish could be utilized as indicators of the health of the wetland ecosystem, it was decided to study the levels of contamination in the fishes of selected wetlands of each state to indicate a contamination profile of wetlands. Around 1700 fishes belonging to 66 species from 177 wetlands spread over the entire country were received. Samples were analyzed for metals and pesticides. While most of the samples have been analyzed, we hope to complete the rest soon. Information based on the preliminary data analyses were shared with the participants at the regional workshops conducted during the last quarter of the financial year. Levels of contaminants in fishes are also looked in contrast to the statutory guidelines of FAO and WHO for human consumption. The predictable out come of the project would be a state-wise contamination profile of the wetlands that would be useful for prioritizing conservation measures.



How safe are they on the dining table or to the fish-eating birds?

Photo: S. Muralidharan

Prioritization of wetlands for conservation

Data on plants, fishes, turtles and birds reported in the literature and from the present study; size of the wetland and socio-economic values were considered while prioritizing the wetlands for long-term conservation. Conservation status of the particular taxa was also examined. A preliminary list of wetlands based on the above criteria was discussed in the "Final Regional Workshops" during December 2002 to March 2003 conducted in seven places. Besides the NGOs, officials from various agencies, especially those from the Forest Departments

Investigators:
S.N. Prasad, V.S. Vijayan, Lalitha Vijayan & S. Muralidharan
Project personnel:
Alok K. Jaggi, Priti Kaushik, Anil Jamwal & State Coodrinators
Duration:
May 2001 to March 2003
Budget:
Rs. 225 lakhs
Funding agency:
UNDP/ GoI
Status:
Ongoing

actively participated in the workshops in finalizing the list of priority wetlands for conservation and suggesting conservation and management measures. It was felt that identified wetlands be declared as "Community reserves or Conservation areas". Importance of wetlands and the imminent need for their conservation was unequivocally expressed. Further studies and monitoring programs were also discussed.

Report of the project is being finalised.

State Coodrinators for field work:

Mr. Aasheesh Pittie (Andhra Pradesh)
Dr. Anwarudin Choudhury (Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Sikkim and Tripura)
Dr. P.C. Bhattacharjee (Assam)
Dr. D.S. Srivastava (Bihar & Jharkhand)
Dr. R.J. Rao (Chhattisgarh and Madhya Pradesh)
Dr. B.M. Parasharya (Gujarat)
Dr. Rajiv Kalsi (Haryana and Punjab)
Mr. Sanjeev Pandey, IFS (Himachal Pradesh)
Mr. A.R. Vani (Jammu & Kashmir)
Mr. S.A. Hussain (Karnataka)
Dr. Erach Bharucha (Maharashtra)
Mr. Manoj Kulshresthra (Rajasthan)
Dr. R.J. Ranjit Daniels (Tamil Nadu)
Dr. Arun Kumar (Uttar Pradeh and Uttaranchal)
Mr. Kushal Mookherjee (West Bengal)

RRSC coordinators for mapping:

Dr. A.K. Tiwari (RRSC, Dehradun)
Dr. V.M. Chaudhary (RRSC, Kharagpur)
Dr. Y.V.N. Krishna Murthy (RRSC, Nagpur)
Dr. J.R. Sharma (RRSC, Jodhpur)
Shri. P.P. Nageswara Rao (RRSC, Bangalore)

24. Conservation and sustainable use of globally significant threatened wetlands in India

Principal Investigators:
Dr. V.S. Vijayan
Co-investigator:
Dr. S.N. Prasad
Collaborative institute:
To be identified
Budget:
US $ 25,000/-
Funding agency:
UNDP/ GEF

The project under PDF-A grant of the UNDP-GEF was sanctioned to SACON for preparing a detailed project document for 4-5 representative wetlands from different biogeographic realms to demonstrate how wetland resources could be utilized sustainably while conserving its biodiversity. Since the approval of the project, there has been several discussions at the UNDP and MoEF on the size and sites of wetlands and scope of the project. It was decided that a large project for PDF-B involving more wetlands could be developed. The same was prepared and submitted to the UNDP-MoEF. However, there was still further discussions on the selection of wetlands and also the availability of funds. Therefore, no progress could be made on this project till the end of the financial year.

25. Database on wetland biodiversity/ ENVIS centre for wetland ecosystem

The SACON has been working on a database for inland wetland biodiversity since the beginning of 2002. Considerable progress has been made. In the meantime, the Ministry of Environment and Forests, Government of India has identified SACON for establishing an ENVIS centre for Wetland Ecosystem. This has boosted the activities.

OBJECTIVES

- Creation of a Web site on Wetland Ecosystem with regional language interface.
- Monthly compilation of news items on Wetland ecosystem.
- Identification of information/ data gaps in the specified subject areas and action taken to fill these gaps.
- Creation of a database on Wetland Ecosystem to be put on web site.
- Contribution of news items for ENVIS newsletter on quarterly basis.
- Establish and operate a distributed clearing house to answer and channel queries related to wetlands.
- Establish linkages with information users, carriers and providers from among government, academia, business and non-governmental organizations including that with ENVIS.

The communication was received during the end of the financial year. Required technical staff are being recruited and the work is expected to commence immediately.



Principal Investigators:
V. S. Vijayan, S. N. Prasad & Lalitha Vijayan
Duration:
Long-term
Budget:
Rs. 6.35 lakhs
Funding agency:
MoEF, Govt. of India
Status:
Ongoing

Common Crane: Khijodia Bird Sanctuary, Gujarat
Photo: V.S. Vijayan

V. ENVIRONMENTAL IMPACT ASSESSMENT

Of late, with the increasing demands for 'development projects' and the equally or more increasing concern over the biodiversity conservation, the role of Environmental Impact Assessment has become more pertinent than ever.

Moreover, it is a mandatory requirement that any new project proposal should be accompanied by a report of Environmental Impact Assessment for clearance of the project. SACON's team has undertaken three projects during the year.

26. Flora and fauna study for rapid environmental impact assessment of Dahej-Hazira-Uran-Dabhol gas pipeline project of M/S GAIL

OBJECTIVE

- Asess the impact of the project on flora and fauna and related ecological aspects.

METHODOLOGY

- The pipeline route was examined following sample survey method during July and August 2002.
- Based on the preliminary examination of the route, locations for intensive study were identified.
- Quadrats were marked in those locations at appropriate interval for intensive study of flora and fauna.

The Gas Authority of India (GAIL) proposes to lay a pipeline network between Dahej in Gujarat and Dabhol in Maharashtra to transport Natural Gas to cater the demand of new consumers in the Maharashtra region. In Dahej-Hazira section, the pipeline follows the ROU of existing IPCL pipeline.

No rare, endangered or threatened species of plants were located along the route during the study. 237 species of plants were recorded along the path of the pipeline and its environs. Among trees, *Acacia* spp and *Terminalia crenulata* were numerically dominant. Around 1,42,233 trees are estimated to be uprooted along the route (considering the width of the ROU to be cleared as 30m).



Underground pipeline while laying

Photo: S. Bhupathy

Of the 158 species of vertebrates recorded during the survey, 15 species are listed in schedule I & II of the Wildlife Protection Act. However, most of these animals are highly mobile and are not very prone to short term disturbances that are likely during the pipeline construction in small stretch of their habitats. Ecological sensitivity / significance of each sector based on the number of animals listed in schedule I & II and the vegetation of the area suggests that the route is comparatively low in ecological sensitivity.

It is recommended that as an environmental conservation measure, GAIL should provide provisions for afforestation programme to compensate loss of natural vegetation and also uprooted trees. Apart from the measures required as per Forest Conservation Act, the afforestation scheme may include the following programmes; i) supply of saplings to local villagers and the land owners, ii) plantation in public / Government land along the route of the pipeline, and iii) collaboration with the local Social Forestry division of the Forest Department and undertake plantation programme.

Major impact of the pipeline project is during the construction. During operation phase the underground pipeline practically does not pose any threat to local ecological make-up, except in case of accidents like leakage. Summer is advisable for construction of the pipeline because i) the primary breeding season for most resident birds commences during premonsoon, ii) winter is the main migratory season for birds and, iii) during monsoon and winter the number of bird species will be high in the area.

Investigators:
P.A. Azeez, S. Bhupathy, A. Rajasekaran & P.R. Arun
Sponsored by:
Gas Authority of India Limited
Status:
Completed

27. Impact assessment of HBJ pipeline upgradation project, phase III on the flora and fauna

The Gas Authority of India Limited (GAIL) proposes to upgrade the existing HBJ pipeline. The majority of the route requires acquiring new RoU. However, the pipeline mostly follows the RoU of existing pipelines in Vijaipur-Kota section. The pipeline is laid to transport natural gas.

Majority of the sampled area, along the route, was agricultural lands, followed by wasteland with neither forest nor agriculture. No rare, endangered or threatened species of plants were located along the route. 105 species of plants were recorded along the path of the pipeline and its environs during the sampling. *Acacia nilotica*, *Dalbergia sissoo* and *Eucalyptus* sp were the numerically dominant trees along the route. Around 74,083 trees are estimated to be uprooted along the route (considering the width of the RoU to be cleared as 30m). As an environmental conservation measure, GAIL should envisage provisions for afforestation programme to compensate the loss of natural vegetation and also the uprooted trees. Apart from the measures required as per Forest Conservation Act, the

OBJECTIVE

- Assess the impact of the project on flora and fauna and related ecological aspects.

METHODOLOGY

- The entire route of the pipeline was examined following sample survey method during April and May 2002.
- Based on a preliminary examination of the route, locations for intensive study were identified.
- In those locations at an interval of approximately 15-20 km, quadrats were marked for intensive study of flora and fauna.



Underground pipeline: a safer mode of transport for petroleum products

Photo: S. Bhupathy

afforestation scheme may include the following programmes; i) supply of saplings to local villagers and the land owners, ii) plantation in public / Government land along the route of the pipeline, and iii) collaboration with the local Social Forestry division of the Forest Department and undertake plantation programme.

Of the 122 species of vertebrates recorded during the survey, 11 species were listed in schedule I & II of the Wildlife Protection Act. However, most of these animals are highly mobile and are not very prone to short term disturbances that are likely during the pipeline construction in small stretch of their habitats. Ecological sensitivity / significance of each sector based on the number of animals listed in schedule I & II and the vegetation of the area suggests that the route is comparatively low in ecological sensitivity.

The major impact of the pipeline project is during the construction. During the operation phase the underground pipeline practically does not pose any threat to the local ecological make-up, except in case of accidents like leakage. Summer is advisable for construction of the pipeline because i) the primary breeding season for most of the resident birds commences with premonsoon, ii) winter is the main migratory season for birds and, iii) during monsoon and winter the number of bird species will be high in the area.

Investigators:
P. A.Azeez,
S. Bhupathy,
A. Rajasekaran &
P.R. Arun
Sponsored by:
Gas Authority of India Limited
Status:
Completed

28. Impact assessment of the Mangalore- Coimbatore LPG pipeline on the flora and fauna

The Gas Authority of India (GAIL) proposes to lay a 670 km long pipeline from Mangalore to Bangalore and Coimbatore, traversing 8 districts of Karnataka and two districts of Tamil Nadu, to transport LPG. The pipeline passes through agricultural fields, forests and private owned estates / plantations. Several wetlands are present in the vicinity of the route. No notified Sanctuary or National Park occur along the pipeline route. 41.4 km of the pipeline route is through reserve / state forest, namely Dharmasthala reserve forest, Balur state forest and Tiganarai -Talamalai RF, which amounts to 82.8 ha considering the width of RoW as 20m. Most of the sector 7 falls within the Nilgiri Biosphere Reserve.

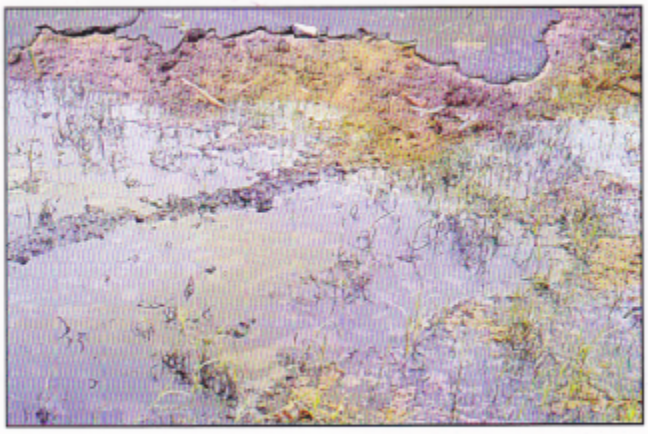
METHODOLOGY

- The entire stretch of the route of the pipeline was examined following sample survey method.
- For intensive survey of flora and fauna, a few replicate quadrats of 25 x 25 m and 100 x 100 m size were marked along the route at an average interval of five km.

Four hundred and sixty eight species of plants comprising 27 species of climbers, 208 of herbs, 96 of shrubs, 18 of stragglers and 119 of trees were recorded along the path of the pipeline and its environs. The major wild species of trees are *Terminalia crenulata, Adina cordifolia, Terminalia paniculata, Careya arborea, Dalbergia latifolia, Ficus hispida, Ficus benghalensis, Ficus microcarpa, Lagerstroemia parviflora,* and, *Terminalia tomentosa*. The major planted species are Arecanut (*Areca catechu*), Coconut (*Cocos nucifera*), Cashew (*Anacardium occidentale*) and Rubber (*Hevea braziliensis*).

A large number of trees, both wild and planted species, will be felled during the creation of RoW. In sector I alone the estimate is about 16,000 wild species and 40,000 planted species. In sector II the number of wild and planted species are about 15,000 each while in sector III, they are 1800 and 2300 respectively. The total number of trees, occurring along the RoW, which will be felled in various sections of the pipeline will be about 1,20,185.

About 82.8 ha of forest land will be converted for the RoW and compensatory afforestation by GAIL is mandatory as per the Forest Conservation Act (1980). The area for compensatory afforestation needs to be identified in consultation with Karnataka and Tamil Nadu state forest departments according to the prevailing norms. In afforestation / tree planting programme, preference should be given to local wild species of plants.



Oil leakage from pipeline

Photo: S. Bhupathy

The study reveals 18 species of mammals, 143 species of birds, 21 species of reptiles, 10 species of amphibians and 37 species of butterflies along the route. Among them, 20 species were listed in Schedule I and II of the Indian Wildlife Protection Act (1972). Twelve species, including nine vulnerable and three endangered species are listed in the Red Data Book of the Zoological Survey India.

An attempt to grade the ecological sensitivity / significance of each sector based on the occurrence, along the proposed pipeline route, of animals belonging to schedule I & II, floral and faunal endemicity, and legal status of the area suggests that the sectors II & VII are of high ecological sensitivity than other sectors. As most of the proposed pipeline shares the existing RoW of the petroleum pipeline along the Sector II, the impact on the ecological make up is limited. Good moist deciduous to evergreen forests exist from Neriya to Guttihalli saddle area (Belur Forests). The proposed pipeline should strictly follow the RoW created for the petroleum pipeline starting from Mangalore to Bangalore in this area in order to keep the disturbance to the minimum.

Sector VII of the proposed pipeline would cut across two ecologically important mountain ranges of the peninsular India, namely the Eastern and the Western Ghats. These forests are known to be ecologically very important and sensitive. Alternate route avoiding the Talamalai reserve forest should be explored. The forest in this area is also a crucial wildlife corridor. Large mammals such as Elephant, Gaur and Blackbuck use this area extensively. Large carnivores (Tiger and Panther) are also found here. It is also a Vulture habitat with a viable population of the dwindling Whitebacked Vulture. In view of these, the area may be declared as a Wildlife Sanctuary. Therefore, alternate routes for the pipeline may have to be located for this sector.

In case an alternate route is not feasible, utmost care should be taken while laying the pipeline in these areas, so that the flora and fauna are least affected. Seasonal and spatial activity patterns of the wildlife should be taken into consideration. The old Tippu Sultan Trail may be followed for the pipeline as far as possible. Subsurface and ground level blasting is known to create long lasting impacts on wildlife in the forested areas. This is especially explicit with respect to the larger ungulates, elephants, predator and prey species. Many of them are very weary of unfamiliar noises and disturbances. Many species living in dens are seen to desert the dens and even infants / cubs due to vibrations from blasting. Blasting is also known to cause vibrations and serious damage to close by landscape. Hence, it is felt that avoiding or minimizing blasting, by resorting to other methods, may be better to minimize the impacts of constructing the underground pipeline.



Wildlife habitat of Talaimalai Reserve Forest
Inset: Tiger scat

Photo: S. Bhupathy

The major impact of the pipeline project is during the construction. During the operation phase, the underground pipeline practically does not pose any threat to the local ecological make-up, except in case of accidents such as leakage. All precautionary measures have to be taken regarding fire hazards, as the Western and Eastern Ghats are known for man-induced fire during dry season.

In sector II and VII, the construction must be completed as fast as possible to minimize disturbance to the ecosystem. Similarly, construction work should be completed at a faster pace in the reserve forests in sector I. In Sector II, the new RoW must follow the existing RoW made for the HPCL's petroleum pipeline. No new RoW may be identified and cleared, as many man-animal conflict in the area recently are ascribed to construction activities of the existing RoW. The sector VII, as it is passing through an important wildlife habitat and also a corridor connecting the Eastern and Western Ghats, is ecologically very important. It is

understood that GAIL has reached at the proposed pipeline alignment after extensive investigations. Nevertheless, it is felt that taking account of the ecological significance, further efforts may be made to avoid disturbance to the locality.

Dry season (March - May) is advisable for construction in sector II because: i) in wet season it will be practically impossible to move the labour, construction machinery and materials in certain areas of sector II, except at a high cost to the local ecological make-up and ii) primary breeding season for most of the resident birds commences with monsoon. In sector VII dry season may be avoided for construction, instead winter season may be suitable. Care should be taken not to erect any permanent barriers along the boundary of RoW, which may hinder the free movemertt of animals.

The forest in Western Ghats are prone to fire during dry season and hence, all precautionary measures against fire should be taken during construction. During the operation phase, the team involved in the regular inspection in sector II and sector VII, should be trained / educated so as to minimize disturbance to wildlife and the local ecological make-up. Activities during morning and evening hours should also be avoided.

As the pipeline in the Managlore-Bangalore sector follows the M/s IIPCL's Petroleum Pipeline RoW, in the long run the proposed pipeline does not seem to cause environmental problems. However, the new line proposed from Hassan to Coimbatore, especially the sector VII may cause environmental problems because of the geographical location of the area, forests, wildlife and fire hazards.

Investigators:
P.A. Azeez,
S. Bhupathy,
A. Rajasekaran,
P.R. Arun &
R. Mohanraj
Sponsored by:
Gas Authority of India Limited
Status:
Completed



UNIVERSITY DEPARTMENT, SEMINARS, WORKSHOPS & DEBATES, AND NATURE EDUCATION ACTIVITIES

UNIVERSITY DEPARTMENT

SACON has been affiliated to the Bharathiar University for conducting M.Phil. and Ph.D. programmes since 1994, and all Scientists at SACON have been recognised as guides in the Departments of Zoology, Botany and Environmental Science of the University. Status of the Ph.D./ M.Phil./ M.Sc. programmes of SACON is given below:

Name of Guide & Department	Name of student	Course	Topic of research	Status
Dr. V.S. Vijayan (Zoology & Env. Science)	S.P. Sankar	Ph.D.	Ecology and behaviour of the White-headed Babbler and Indian Robin in the Anaikatty hills	In Progress
Dr. Lalitha Vijayan (Zoology & Env. Science)	Sr. T. Nirmala	Ph.D. (FIP, UGC)	Bird communities in the Anaikatty hills	Degree awarded
	S. Somasundaram	Ph.D.	Ecology of the Nilgiri Wood Pigeon	In Progress
	J. Umamaheshwary	Ph.D.	Ecology of the Nilgiri Pipit	In Progress
Dr. Ajith Kumar (Zoology)	R. Krishnamani	Ph.D.	Phyto-ecology of the Lion-tailed Mecaque habitats in Southern India	Degree awarded
Dr. S. Muralidharan (Env. Science)	R. Jayakumar	Ph.D.	Heavy metal contamination in Inlandwetland fishes of India	In progress
	B. Sivasathya	M.Sc.	Persistent elemental contaminants in a few species of fish-eating birds in Coimbatore during 2003	Dissertation submitted
	R. Rajendran	M.Sc.	Residues of Endosulfan in vegetables and impact of its usage on the avifauna of an agroecosystem	Dissertation submitted
Dr. S. Bhupathy (Zoology)	Mathews Nixon Armstrong	Ph.D.	A study on the reptile community of the upper Nilgiri Plateau, Western Ghats, India	In progress
	Debanik Mukherjee	Ph.D.	Resource utilisation patterns of reptiles in Anaikatty Hills, Western Ghats, India	In progress
Dr. P. Balasubramanian (Botany)	B. Maheswaran	Ph.D.	Habitat Utilization by Malabar Grey Hornbill in Mudumalai Wildlife Sanctuary, Western Ghats	Thesis submitted
	M. Gunasekaran	Ph.D.	"Sthalavriksha" practice in conservation of plant biodiversity in Tamil Nadu	In progress
Dr. P.A. Azeez (Env. Science)	R. Mohanraj	Ph.D.	Air pollution in Coimbatore with emphasize on Respirable Suspended Particulate Matter in its health implications	Thesis submitted
	Baladhandapani	Ph.D.	Techno-economic evaluation of textile effluents in Tiruppur	In progress
Dr. P. Pramod (Zoology)	R. Eswaran	Ph.D.	Ecological studies on insect communities of Anaikatty hills	In progress

The thesis submitted by Sr. T. Nirmala "Bird communities in the Anaikatty hills" has won a Gold Medal for being the best thesis of the University for the year.

SEMINARS, WORKSHOPS AND DEBATES

SACON, during the year, conducted seven workshops and four debates.

Regional wetland workshops

Regional workshops on wetland prioritization were conducted at Coimbatore, Hyderabad, Calcutta, Pune, Ahemedabad, Jaipur and Dehra Dun. The results of the field studies conducted on Inland Wetlands of India in various states, prioritization based on the size of the wetlands, biodiversity values and community dependence (socio economics) of the wetlands were discussed. The participants included the actual field workers,



Dr. Bakul Trivedi, Jt. Secretary, BCSG welcoming the participants. Mr. Pradeep Khanna, IFS, CCF (WL), Gujarat, Mr. Lavkumar Kachar, President, BCSG and Dr. V.S. Vijayan, Director, SACON are on the dias.

Photo: B.M. Parasharya

Organisers

SACON: V.S. Vijayan, S.N. Prasad, Lalitha Vijayan & S. Muralidharan

Coordinators

Coimbatore:
SACON

Hyderabad:
Mr.Aasheesh Pittie
Bird Watcher's Society of Andhra Praesh

Calcutta:
Mr. Kushal Mookherjee
Prakriti Samsad

Pune:
Dr. Erach Bharucha
Bharati Vidyapeeth Deemed University
Institute of Environment Education and Research

Ahmedabad:
Dr. B.M. Parasharya
Bird Conservation Society of Gujarat

Jaipur:
Mr. Manoj Kulshreshtha
Indian Bird Conservation Network

Dehra Dun:
Dr. Arun Kumar
Zoological Survey of India

Capsule course for research students

Programme coodrinator: P. Pramod

SACON conducted a capsule course for the students working in various projects and also doing Ph.D. The following topics were covered by various faculty members according to their specialization: general ornithology, behaviour ecology, ecological entomology, community ecology, social behaviour, statistical methods in ecology and behaviour studies, laboratory and field techniques, herbarium techniques, plant ecology, plant-animal interactions and human impact on environment.

Field demonstration of sampling techniques and surveys and, bird banding were also made for the benefit of the students.

On conclusion of the course, a test was conducted to evaluate the success of the programme. Altogether 28 students attended the programme.

local NGOs and forest department officials. It was encouraging that a consensus was reached among the participants on the wetlands to be included in the proposed Protected Area Network of wetlands in the country. It was also resolved that these wetlands should be considered as "community reserves".

The **Annual Research Seminar (ARS)** was conducted in September 2002. All the research fellows and the faculty members presented their respective research progress highlighting the activities of the year.

The ARS was attended by Mr. David Ferguson of the US Fish and Wildlife Services, Washington, Ms. Lori Peterson Dando, Science & Environmental Officer of the US Embassy in Delhi, Dr. Robert B. Grubh (Director, Institute for Restoration of Natural Environment), Mr. S.A. Hussain (Biodiversity Initiative, Karkala, Mangalore), Dr. R. Uma Shaanker (Honorary Director, ATREE, Bangalore also Associate Professor, University of Agricultural Science, Bangalore) apart from the scientists from local scientific institutions and members of the Research Monitoring and Advisory Committee of SACON. The ARS was chaired by Dr. J.R.B. Alfred, Chairman of the RMAC.

Debate on 'Biodiversity and Globalization'

A debate was conducted on Biodiversity and Globalization on the occasion of World Environment Day and SACON's 12th Foundation Day on 5th June 2002. The programme was conducted in the Southern Forest Service College (SFSC), Coimbatore. Seventy scientists/managers attended the debate. Dr. V.S. Vijayan , Director, SACON, presented a working paper on which the debate was started. Dr. K.P.S. Chauhan, Formerly Director at the Ministry of Environment & Forests, Govt. of India, presented the legal status of the various problems, Prof. K. Ramakrishnan, Head, Dept. of Management, Bharathiar University and Dr. Mohanasundaram, Dept. of Economics, P.S.G. College of Arts and Science presented their views on socio-political and economic aspects. Prof. K.R. Janardhanan of Kerala Sastra Sahithya Parishad, Thrissur emphasized the need for ecological globalization instead of economic globalization. Prof. K.S. Neelakantan, Dean Forest College, Mettupalayam emphasized the imperativeness of adopting organic farming. Dr. Kunhi Kannan, Scientist, Institute of Forest Genetics and Tree Breeding presented a paper on seed collection, classification and documentation. Dr. M. Maheswaran, Professor, Tamil Nadu Agricultural University presented the positive part of Biotechnology and Globalization and stressed how it could be used for the benefit of conservation of biodiversity. Mr. T. Madhava Menon, Ex-Vice Chancellor of Kerala Agricultural University highlighted the eco-friendly traditional life-styles and the need for learning important simple models from the life of tribals and, also preserving their culture. Dr. V. Ramakantha, Principal of SFSC Coimbatore presented the ethical angle of biodiversity conservation. All the scientists of SACON actively participated in the debate. The meeting concluded with a resolution to conduct a three day workshop to debate the issue further.

Accordingly a three day workshop on the Biodiversity and Globalization was conducted in SACON between 29 and 30 July 2002 focusing on the following issues. About 50 eminent scientists and personalities attended the programme.

1. Globalization - Biodiversity and Biodiversity Conservation: 29 July 2002

Status of Biotechnology and Bioinformatics related infrastructure, and its development in

India, Biosafety protocol, and IPR regimes in the light of the WTO agreements, and the Problems related to the policy of Genetically Modified Organisms (GMOs) were the major issues picked up the heat of the discussion.

2. Globalization - Industries - Climate Change and Biodiversity conservation

The debate started with the presentation of the Global, regional and local problems related to the ongoing globalization process and its impact on climate change and biodiversity conservation.

Kyoto protocol and the convention of Climate Change and the legal as well as practical measures to deal with the related policy issues were discussed. The debate also focused on the changing biomas and biodiversity hotspots in the light of the Climate change and the role of Globalization in triggering off the climate change.

3. Globalization - Tribal Rights and Intellectual Property Right, and Biodiversity conservation

Rights of tribals who are highly biodiversity dependent even today were discussed in length along with the allied issues on biodiversity conservation. Two local village representatives who work with the local tribals in Anaikatty also presented their view points. The forth-coming Biodiversity legislation, our country's rights and responsibilities in the light of the Convention of Biodiversity (CBD) and the international negotiations were discussed in detail. Implementation of Article 8j of the CBD in the light of tribal rights and Indian biodiversity act was also discussed.

Lectures on "Population decline in Indian Avifauna: Are pesticides a factor? Need for coordinated approach"

Dr. S. Muralidharan of the Ecotoxicology Division in an attempt to seek support and generating more information on the ill effects of pesticides on birds, gave a series of lectures at the Regional Workshops conducted under the UNDP project in Coimbatore, Calcutta, Pune, Ahmedabad and Jaipur. It was attended to by a fairly good number of scientists, field biologists, and forest officials across the country. The participants of the workshop were briefed on the present situation on the impact of pesticides on birds with specific case study outputs and, their cooperation for a joint effort towards monitoring the ill effects of agricultural chemicals on birds was sought. They were also briefed about the procedure to be followed when they come across a dead bird. A field kit has also been developed for shipment of dead birds which can be obtained from SACON. The lectures were well received in all the places and the participants assured cooperation in our efforts to Monitore Environmental Contamination in Indian avifauna.



Pesticide spray in banana plantation: would it not also affect the birds?

Photo: S. Muralidharan

NATURE EDUCATION ACTIVITIES

The following activities were conducted as a part of the nature education activities of SACON in the year 2002-2003.

Coordinator	:	P. Pramod
Project period	:	Long-term
Budget	:	3 lakhs
Funding agency	:	SACON

Sálim Ali Nature Club Network

Various programmes were arranged in the schools of the nature club network. Guest lectures, nature awareness campaign, one-day nature camps, visits to forests and wetlands were conducted. About 1500 students from 52 schools are members of this network. 1300 students were benefited from these activities during the year. About 510 students visited SACON for one day nature camps and 790 students were benefited from the various other activities such as slide shows and lectures given in the schools and nature awareness field trips to forests.

Nature Competitions for Sálim Ali Rolling Trophy

400 students from 40 schools attended the nature competitions during the year. 14 different competitions were held and 46 students from 21 schools bagged the prizes. The Sálim Ali Rolling Trophy for 2002-2003 has been retained for the second consecutive year by the SBOA Matric. Hr. Sec. School, Coimbatore.



Sálim Ali Rolling Trophy being awarded to SBOA Matriculation Higher Secondary School

Sálim Ali Memorial Lecture

Ms Sunitha Narain, Director, Centre for Science and Environment, New Delhi delivered the Salim Ali memorial lecture of the year titled **"Environmental challenges: Re-engaging science in governance"**, in connection with the 106th birth Anniversary of late Dr. Salim Ali. Dr. Kulathaivel, The Hon. Chancellor of the Avinasalingam Deemed University presided over the function which was attended to by around 150 delegates.



Ms. Sunitha Narain, Director, Centre for Science and Environment, delivering Sálim Ali Memorial Lecture

Teachers Training programmes

Two training programmes were conducted during the year. 80 teachers who are the nature club coordinators of the schools attended to these training programmes.

Anti plastic campaign

On 7 and 10 January 2003, the Nature Education division of SACON mobilized 850 students to take part in a programme of cleaning the Coimbatore city off plastic wastes. The programme was organized by the Municipal Commissioner and



Off to plastics

Mayor. The students under the leadership of the Director, SACON and Nature Education Officer, not only removed plastics from the various parts of the city but involved in the door to door campaign against the ill effects of plastic usage.

Student research programmes

Students research programmes were initiated to create a scientific temper in the young minds. Students from some of the schools participated in these research programmes in ecology and agriculture related topics. The VIIIth standard students from PSGG Kanya Gurukulam Girls High School made a comparison of organic farming and chemical farming. They have made a proforma for collection of data, visited the field by themselves, collected some samples for pesticide analysis and brought them to SACON's lab for analyses, interviewed the farmers, compared the various parameters and, found that organic farming was much more beneficial than the inorganic farming, both ecologically and economically. To encourage the kids, they were facilitated to give a presentation at the Annual Research Seminar of SACON.

Nature Club Network for Colleges

Like the nature club network for school, a network for the colleges was also inaugurated during the year. So far six colleges enrolled in the network. Nature camps, small research programmes and environmental awareness programmes are being initiated.

Visits to SACON

Teachers participating in the Refresher course from Bharathiar University and Avinasalinagam University, and the trainees of State Forest Service College, Coimbatore and Dehradun, and the trainees of State Forest Rangers College Coimbatore visited the SACON during the year. A day long programme was arranged for them. Each consists of talks on various aspects of biodiversity conservation and environmental pollution.

Trekking to Dumanur

A trekking to tribal village Dumanur in Anaikatty forest was conducted on Independence Day for the 30 nature lovers of Coimabatore.

Invited Lectures

The major invited lectures of 2002-2003 are the following:

13 May 2002-Dr. Rohini Balakrishnan. Assistant Professor of Centre for Ecological Sciences, Indian Institute of Science, delivered a lecture on the "Acoustic communication of insects".

14 June 2002 - Dr. Naveen Raman Kutty, Scientist from University of Wisconsin gave a lecture on " Land use and Land cover changes".

25 November 2002 - Dr. B.N.K Davis, The Chief Editor of *Biological Conservation* presented a "Comparison of conservation in Silent valley and Cairngorm Mountains in Scotland".

ORGANISATION

The SACON Society comprises the President, all members of the Governing Council (11); five nominees of BNHS; two faculty members and 38 members nominated by the Governing Council every three years. Mr. T.R. Baalu, Honourable Minister for Environment & Forests, Government of India is the President of the society. Director, SACON is the Member Secretary (Appendix I).

Administration of SACON is vested in a Governing Council comprising 11 members which include the Chairman (Secretary/Special Secretary /Additional Secretary to Govt. of India, MoEF), six ex-officio members and four nominees of the Governing Council. The Director, SACON is the Member Secretary.

The Governing Council is advised by a Finance Committee and a Research Advisory Committee. It also has a Building Subcommittee to go through the nitty-gritty of the construction.

Research activities have been organized under six research divisions, namely Avian Ecology, Conservation Biology, Ecotoxicology, Environmental Impact Assessment, Terrestrial Ecology and Wetland Ecology. Scientific staff strength was 10 during the year, with four each of Senior Principal Scientist and Senior Scientist, one Nature Education Officer and the Director.

The administrative section had a Senior Finance Officer, Junior Administrative Manager, Personal Assistant to Director, Administrative Assistant, Accounts Assistant, Office Assistant, Stenographer and Receptionist.

SACON Society

The 12th Annual General Meeting of the Society was held on 24 September 2002 at SACON. The President, Mr. T.R. Baalu chaired the meeting.

Governing Council

The Governing Council met three times during the year (3 April and 22 September 2002 and 20 March 20003). Mr. A.M. Gokhale, IAS, Additional

Members of the Governing Council

Chairman	**Mr. A.M. Gokhale, IAS**, Additional Secretary to Govt. of India, MoEF (up to October 2002)
	Mr. K.C. Misra, IAS, Secretary to Govt. of India, MoEF (since November 2002)
Joint Secretary & Financial Adviser, MoEF, Govt. of India	Mr. Y.S. Bhave, IAS
Secretary to Govt. of Tamil Nadu Department of Environment & Forests	Mrs. Girija Vaidyanathan, IAS (up to 14 August 2002)
	Mr S. Ramakrishnan, IAS (15.8.2002 to 3.12.2002)
	Mr. S.P. Elangovan, IAS (since 4 December 2002)
Vice Chancellor, Bharathiar University	Rev. Fr. Dr. S. Ignachimuthu (up to 23 June 2002)
	Member, Vice-Chancellor Conveners Committee (since 24 June 2002)
Director, Bombay Natural History Society	Dr. Asad R. Rahmani
Chairman, Centre for Ecological Science, Bangalore	Dr. Raghavendra Gadagkar (up to 18 September 2002)
	Dr. N.V. Joshi (since 19 September 2002)
Governing Council Nominees	4 positions vacant
Director, SACON (Member Secretary)	Dr. V.S. Vijayan

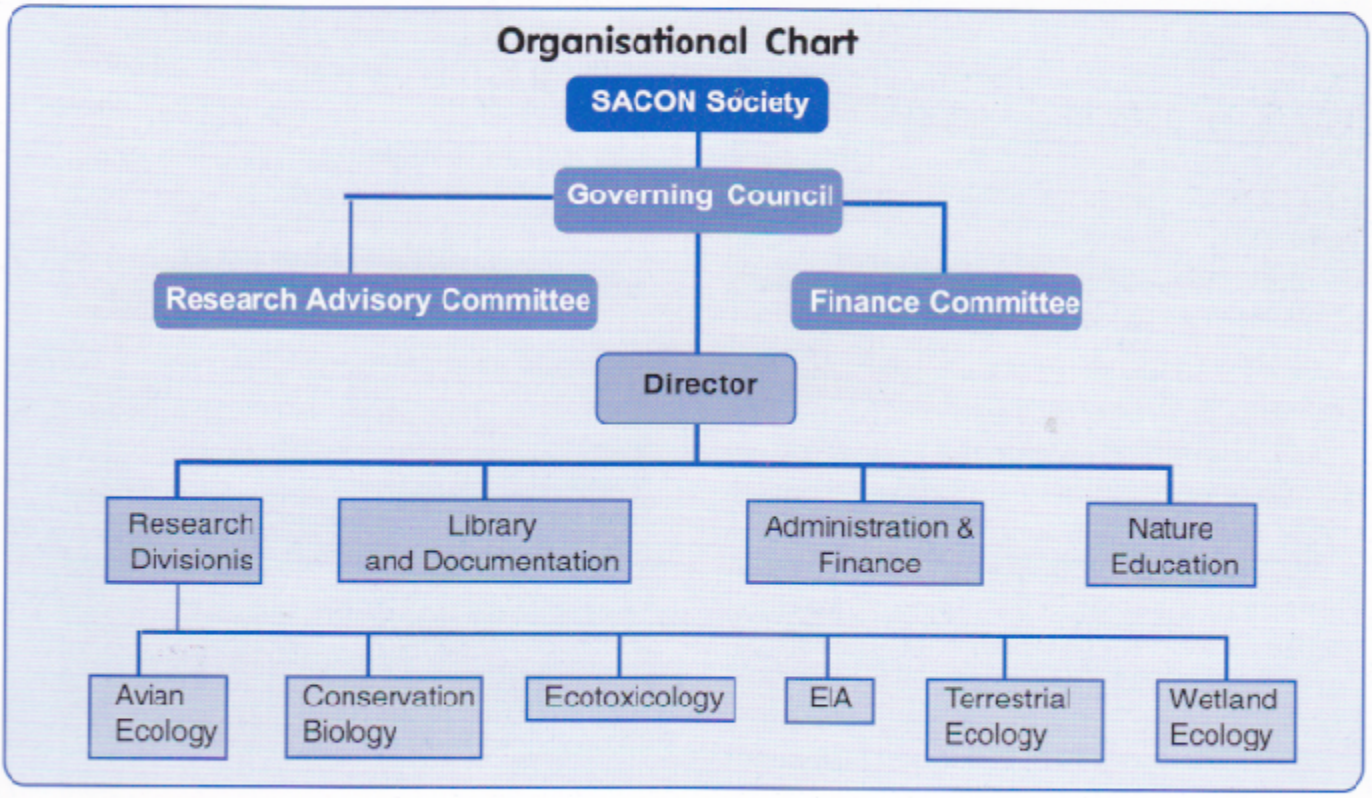
Secretary, Ministry of Environment & Forests continued to be the Chairman till October 2002. Since then Mr. K.C. Misra, IAS, Secretary, Ministry of Environment & Forests took over as Chairman.

Research Monitoring and Advisory Committee

The Research Monitoring and Advisory Committee of SACON consists of 16 members nominated by the Governing Council. The RMAC met twice this year (22 September 2002 and 7 March 2002) and reviewed the ongoing research projects and evaluated the new projects submitted by the faculty.

Members of the Research Monitoring and Advisory Committee (RMAC)

Dr J R B Alfred (Chairman)	Director, ZSI, Calcutta
Dr Raghavendra Gadagkar	Chairman, CES, Bangalore
Dr A R Rahmani	Director, BNHS, Mumbai
Dr Sukhdev Thakur, IFS	Chief Wildlife Warden, Tamil Nadu
Mr S K Chakrabarti, IFS	Principal Chief Conservator of Forests (WL), Karnataka
Mr V Gopinathan, IFS	Chief Conservator of Forests (WL), Kerala
Mr Pratap Singh, IFS	Dy. Conservator of Forests, Andaman & Nocobar Is.
Dr G Kumaravelu, IFS	Chief Conservator of Forests (Research, Training & Extension)
Dr N V Joshi	Centre for Ecological Sciences, IISc, Bangalore
Dr D N Mathew	Retd. Prof. of Ornithology, Calicut University
Dr R K Rai	Additional Director (CS), MoEF, New Delhi
Dr Lalitha Vijayan	Principal Scientist, SACON
Dr S N Prasad	Principal Scientist, SACON
Dr Ajith Kumar	Principal Scientist, SACON
Dr P A Azeez	Principal Scientist, SACON
Dr V S Vijayan	Director, SACON / Member Secretary



STAFF OF SACON

Scientific

Director	: Dr. V.S. Vijayan, M.Sc., Ph.D.
Avian Ecology	: Dr. Lalitha Vijayan, M.Sc., Ph.D.
	Dr. Ravi Sankaran, B.Sc., Ph.D.
Conservation Biology	: Dr. Ajith Kumar, M.Sc., Ph.D.
Terrestrial Ecology	: Dr. S.N. Prasad, M.Sc., Ph.D.
	Dr. P.Balasubramanian, M.Sc., Ph.D.
Ecotoxicology	: Dr. S. Muralidharan, M.Sc., Ph.D.
Environmental Impact Assessment	: Dr. P.A. Azeez, M.Sc., Ph.D.
	Dr. S. Bhupathy, M.Sc., Ph.D.
Nature Education Officer	: Dr. P. Pramod, M.Sc., Ph.D.

Technical

Library & Information	: M. Manoharan, B.A., M.L.I.Sc., PGDCA (since 7.10.2002)

Establishment

Finance Officer (up to 27.3.2003) / Sr. Finance Officer (since 28.3.2003)	: Mrs. Jayashree Muralidharan M.Com., CS, Grad CWAI
Junior Admn. Manager	: Mr. E. Devendran Dayarantham, B.Sc., MLM (since 24.2.2003)
PA to Director	: Mr. V. Vaidiyarathan, B.Sc.
Administratve Assistant	: Mr. M. Unnikrishnan, B.Com.
Accounts Assistant	: Mr. S.N. Krishnamoorthy, B.Com.
Office Assistant	: Mrs. R. Rajalakshmi, B.Com.
Stenographer	: Mr. M. Ganamuthu, M.A.
Receptionist	: Ms. M. Jayageetha, B.Sc.
Site Engineer	: Mr. T.B. Ibrahim Kutty (on contract)
Computer Assistant	: Mr. K.K. Ramakrishnan, B.Sc.,PGDCA (on contract)

INFRASTRUCTURE

Permanent campus



SACON campus *Photo: Sr. T. Nirmala*

SACON's location at Anaikatty with the backdrop of Western Ghats, one of the 'hot spots' of biodiversity in the world, offers envious opportunities to undertake long-term studies on various aspects of its varied avifaun a, and on the biological principles and phenomena involved in the maintenance of the fragile systems. The trijunction of Kerala, Tamil Nadu and Karnataka in the Western Ghats, considered to be one of the best wildlife areas in the country having a larger number of Protected Areas, is only within a few hours of drive. SACON sets up field stations in various parts of the country according to the requirements of the research projects.

No additions were made to the permanent building during the year.

Laboratory facilities

Only some minor additions could be made to the existing equipment in the ecotoxicology laboratory.



Laboratory

* Atomic Absorption Spectrophotometer (AAS)-Perkin-Elmer, Model 3300 with 13 lamps for analyzing metal contamination.
* Mercury Hydride Generator-Perkin Elmer for analyzing mercury and other hydride forming elements.
* Gas Chromatography (GC) - Hewlett Packard Model 5890 Series II with three detectors, namely Electron Capture Detector (ECD), Nitrogen Phosphorous Detector (NPD) and Flame Photometric Detector (FPD) for analyzing pesticide residues.
* Microwave Digestion System-Milestone Model 1200 for digesting samples for analysis in the AAS.
* High volume air sample for analysing suspended particulate matters (spar), oxides of Nitrogen (NOX) and Sulphur (SOX).

Laboratory has also been equipped to monitor air, water and soil quality.

Computer facilities

Each Scientist has been provided with a Pentium PC in addition to the general facility for students and visiting scientists. All are connected with Local Area Network.

Library

An addition of 194 books, 136 volumes of periodicals was made to the Library. Total holding of the library is 2467 books, 2270 back volumes of periodicals, 71 current periodicals (Indian-38; International-33), 2111 maps and 108 CD ROM of reference materials including Indian Forester Information System (Vol. 1-125), Birds of Tropical Asia 2: Sounds and sights, Proceedings of 22nd International Ornithological Congress, A bibliographic index to the birds of Indian subcontinent, Global Bird Dictionary (Nomina) and IRS IC/ID digital album.. Facilities for literature searches through internet were provided to the staff and students. As in the previous years, the library facilities were used by sister organisations especially, by Ph.D. scholars.



Library

PUBLICATIONS

Papers

Anoop Das, K.S. and L.Vijayan (in Press). Nest and nest-site selection of the Malabar Whistling Thrush (*Myiophonus horsfieldii*) in Silent Valley National Park, Kerala. *In:* Proceedings of the 28th Ethological Soc. of India Conference, Mundanthurai, Tirunelveli.

Arun, P.R. (2003). Butterflies of Siruvani forests of Western Ghats with notes on their Seasonality. *Zoos' Print*, 18 (2), 1003-1006.

Azeez, P.A., Sivakumar, R. and Mohanraj, R. (2001). Rapid environmental impact assessment of a foundry equipped with electric induction furnace. *In:* M.N. Madhystha, K.R. Sridhar and AhanaLakshi (eds) Prospects and problems of environment – Across the Millennium, Daya Publishing House, Delhi, pp. 207-223.

Balasubramanian, P. and Maheswaran, B. (2002). Peoples Perception about Hornbills; An Experience from Nilgiris, *SACON Newsletter*.

Balasubramanian, P. and Maheswaran, B. (2003). Frugivory, Seed Dispersal and Regeneration by birds in south Indian Forests, *J. Bombay nat. Hist. Soc. Centennial Publication* Vol. 100 (1).

Bhupathy, S. and A.M.A. Nixon (2002). Communal egg laying by *Cnemaspis indica* in Mukuruthi National Park, Western Ghats, India. *J. Bombay nat. Hist. Soc.* 99(2): 330-332.

Bhupathy, S. and R. Karunakaran (2003). Conservation of sea turtles along the Nagapattinam coast Southeastern India. *Indian Journal of Marine Sciences 32(2):* 168-171.

Bhupathy, S. and S. Saravanan (2002). Status of sea turtles along the Tamil Nadu coast, India. *Kachhapa* 7: 7-13.

Bhupathy, S. and S. Saravanan (2003). Decline of Green turtles in Gulf of Mannar. *Chelonian Conservation and Biology*, 4 (4).

Bhupathy, S. and S. Saravanan (*Accepted*). Exploitation of sea turtles along the southeastern Coast of Tamil Nadu, India. *J. Bombay nat. Hist. Soc.*

Bhupathy, S. and S. Saravanan (*Accepted*). Marine turtles of Tamil Nadu and their conservation status. *In:* B.C. Choudhury and Kartik Shankar (eds.) Marine turtles of India. Oxford University Press, Mumbai.

Jayakumar, R. and S. Muralidharan (Communicated). Heavy metal contamination in a few species of commercial fishes of Coimbatore district, *Aquatic Toxicology*.

Krishnan, S., S. Bhupathy and Devi Prasad (*Accepted*). Monitoring of Indian Python in KNP. *J. Herpetological Natural History*.

Maheswaran, B. and Balasubramanian, P. (2003). Diversity and distribution of trees in a semi-evergreen forest at Mudumalai Wildlife Sanctuary, Western Ghats. *Proceedings of the National Seminar on Plant Taxonomy in Nation Development*, Goa University.

Maheswaran, B. and Balasubramanian, P. (2003). Nest tree utilization by the Malabar Grey Hornbill *Ocyceros griseus* in the semi-evergreen forest of Mudumalai Wildlife Sanctuary (S. India). *Acta Ornithologica* Vol. 38 (1): 33-37.

Mathew Mercy, R. Mohanraj, P.A. Azeez and S. Pattabi (2002). Speciation of heavy metals in bed sediments of wetlands in Urban Coimbatore, India. *Bulletin of Environmental Contamination and Toxicology* 68:380-393.

Mohanraj, R. and P.A. Azeez (2002). Cancer in the air we breathe – The organic air pollutants, *Science and Culture*, Vol. 67: 308-309.

Muralidharan, S., R. Jayakumar and Vishnu (Communicated). Heavy metal contamination in the feathers of a few species of birds in Nilgiri district. *Bulletin of Environmental contamination and Toxicology*.

Muralidharan, S., R. Jayakumar, N. Veerakumar and Suresh Babu (In press). Heavy metal contamination in the fishes of selected high altitude water bodies in the Nilgiris district. *Proceedings of the symposium on conservation, Restoration and Management of Aquatic ecosystem*. Centre for Ecological Sciences, Banglore.

Nirmala, T. and L. Vijayan (in Press). Insect communities in the mixed dry deciduous and scrub forests at Anaikatty Hills, Coimbatore. *In:* Proceedings of the National Conference on Recent Trends in Insect Control, January 22-24, 2003. Bharathiar University.

Nirmala, T. and L. Vijayan (in Press). Breeding behaviour of the Indian Robin *Saxicoloides fulicata* in the Anaikatty hills, Coimbatore. *In:* Proceedings of the 28th Ethological Soc. of India Conference, Mundanthurai, Tirunelveli.

Prasad, S.N., Alok Kumar, A.K. Tiwari, V.S. Vijayan and Lalita Vijayan (2002). Remote sensing Indian wetlands for conservation planning. Paper in the International Conference on Wetland Restoration-addressing Asian Issues through international collaboration, September 8-13, 2002 Nanjing, China. (abstract).

Sivakumar, K. and Sankaran, R. (In press). Incubation mound of the Nicobar Megapode *Megapodius nicobariensis*. *J Bombay nat. Hist. Soc.*

Sivakumar, K. and Sankaran, R. (In press). Notes on the chicks of the Nicobar Megapode *Megapodius nicobariensis*. *J Bombay nat. Hist. Soc.*

Sivakumar, K. and Sankaran, R. (Submitted). Habitat utilization in the Nicobar Megapode.

Somasundaram. S. and L. Vijayan (in Press). Nest-site selection behaviour of the Black-and orange Flycatcher in the Palni hills. *In:* Proceedings of the 28th Ethological Soc. of India Conference, Mundanthurai, Tirunelveli.

Umamaheswary, J. and L.Vijayan (in Press). Some Observations on the behavioural ecology of the Nilgiri Pipit. *In:* Proceedings of the 28th Ethological Soc. of India Conference, Mundanthurai, Tirunelveli.

Vijayan, L. and V. Gokula (in Press). Human Impact on the Bird Communities in the Western Ghats. *In: Proceedings of the Chinese Acad. Sciences.* (Proc. of the 23rd International Ornithological Congress, Symposium paper).

Vijayan, L., S.N. Prasad and S. Rai (2003). A study on the habitat of an endangered bird, the Nilgiri Laughing Thrush, using Remote Sensing and GIS at the National Seminar on RS & GIS in Natural Resources Management- current status and emerging trends. School of Envtl. Sciences, M G Univ. Kottayam. 15-17 March. 2003 (abstract).

Vijayan, L., Sr. T. Nirmala and V. Gokula (2003). Foraging behaviour of the land birds. 28th Ethological Soc. of India Conference, Mundanthurai, Tirunelveli., 7 & 8 February 2003 (Abstract).

Symposia/ Seminars/ Conferences

Arun, P.R. (2002). Threats to the sustainable management of indigenous people and their knowledge systems: The Indian Scenario. Paper presented in UGC National Seminar on Innovation for sustainable development: Interfacing Indigenous Knowledge systems with Bio-diversity and Food security, 23-25 October 2002, Kolli Hills, Namakkal, Tamil Nadu.

Arun, P.R., Rajasekaran, A, Azeez, P.A. and Bhupathy, S. (2002). Impact of Anthropogenic Pressure on the Biodiversity of Kolli Hills, Eastern Ghats. Paper presented in National Seminar on Conservation of Eastern Ghats, 24- 25 March 2002, Tirupati.

Balasubramanian, P. and Maheswaran, B. National Seminar on Plant Taxonomy in Nation Development, Goa, September 26-27, 2002.

Balasubramanian, P. Meeting on National Biodiversity Strategy Action Plan –Tamil Nadu, Sponsored by the Tamil Nadu Forest Department, January 8, 2003 at SACON.

Balasubramanian, P. Training on Environment Management, sponsored by the Ministry of Environment and Forests, Govt. of India at ASCI, Hyderabad, July 8-12, 2002.

Bhupathy, S. Capacity building training workshop on sea turtle conservation and management of frontline staff of wildlife, fisheries and research organisation of the west coast of India and Lakshadweep. Central Marine Fisheries Research Institute and Wildlife Institute of India.19-21 June 2002, Cochin. (as Resource person).

Bhupathy, S. Capacity building training workshop on sea turtle conservation and management for the frontline staff of east coast maritime states. Orissa Forest Department and Wildlife Institute of India. 27-29 June 2002, Rambha, Orissa. (as Resource person).

Bhupathy, S. National Seminar on conservation and management of marine biodiversity, Wildlife Institute of India, Dehra Dun.21-22 March 2003, Kanyakuman, Tamil Nadu.

Mohanraj, R. and P.A. Azeez (2002). PM 10 concentrations with emphasis to its elemental and micro-organic composition, 21st Annual conference of American Association for Aerosol Research, Oct 7-11, 2002, North Carolina, USA.

Moorthy, K., Workshop for the PBR through schools (or SBR) conducted by Prof. Madhav Gadgil of Centre for Ecological Sciences, Indian Institute of Sciences Bangalore, 27- 29 May 2002.

Nirmala, T. and Vijayan, L. Behaviour of bulbuls in the Anaikatty Hills, Coimbatore. Paper presented at 27th ESI Conference, Department of Zoology, Univ. Kerala, Thirvananthapuram, 21-22 April 2002.

Rajasekaran, A., Arun P.R., Azeez, P.A. and Bhupathy, S. (2002). Ecological Observations on Baphlimali Hill and its Environs, Orissa. Paper presented in National Seminar on Conservation of Eastern Ghats, 24- 25 March 2002, Tirupati.

Vijayan, L. 28th Ethological Soc. of India Conference, gave plenary lecture on Foraging behaviour of land birds. 7 & 8 February 2003.

Vijayan, L. Meeting of NGOs for Revival of Noyyal; discussing the action plan & submitting a memorandum to all the officers concerned, 12 April & May.

Vijayan, L. 23rd International Ornithological Congress at Beijing :1) Presented an invited paper at the symposium "Ecological Forestry and Avian Communities". 2). Participated in the invited round-tables on: (a) Ecology: Birds and Forestry and (b).'Collapse of vulture populations in Southern Asia'. China. 12-17 Aug. 2002.

Vijayan, L. International Crane Workshop, Beijing, China. August 2002.

Vijayan, L. National Seminar on RS & GIS in Natural Resources Management- current status and emerging trends. School of Envtl. Sciences, M G Univ. Kottayam. Keynote address on " A study on the habitat of an endangered bird, the Nilgiri Laughing Thrush, using RS & GIS" co-authored with Dr. S N Prasad and Mr. Shashank Rai. 15-17 March 2003.

Reports

Azeez, P.A., S. Bhupathy, A. Rajasekaran and P.R. Arun (2002). Impact assessment of HBJ pipeline upgradation project, phase III (Gas Authority of India Limited) on the flora and fauna. Gas Authority of India Limited, New Delhi.

Azeez, P.A., S. Bhupathy, A. Rajasekaran and P.R. Arun (2002). Study of flora and fauna and impact assessment of the Mangalore- Coimbatore LPG

pipeline (Gas Authority of India Limited) on the flora and fauna. Gas Authority of India Limited, New Delhi.

Azeez, P.A., S. Bhupathy, A. Rajasekaran, P.R. Arun and R. Mohanraj (2002). Flora and fauna study for rapid environmental impact assessment of Dahej-Hazira-Uran-Dabhol gas pipeline project of M/S GAIL, Gas Authority of India Limited, New Delhi.

Balasubramanian, P., P. Mahendramani and K. Padmapriya (2002). Comparison of plant biodiversity patterns of variously disturbed habitats of Moongilpallam area in the Western Ghats, Miscellaneous Report, SACON.

Balasubramanian, P. and Maheswaran, B. (2003). Hornbill-tree interactions with special reference to identification and conservation of keystone mutualists in Nilgiri Biosphere Reserve. Final Report, SACON, submitted to MOE&F, Govt. of India.

Balasubramanian, P. and Vijayan, L. (2003). Conservation strategies for the birds of Tamil Nadu, chapter contributed for NBSAP report, Tamil Nadu.

Vijayan, L., Umamaheswary, J. and Somasundaram, S. Status and ecology of the Nilgiri Wood Pigeon and Nilgiri Pipit. Interim Reports I&II submitted to the Ministry of Environment & Forests, Government of India.

Talks/ lectures delivered

Azeez, P.A. (2002). Sustainable development. Talk delivered in Training programme "Environmental management and sustainable development", Nachimuthu Polytechnic, Pollachi, Tamilnadu.

Azeez, P.A. (2003). EIA in the context of sustainable development. Refresher course in Environmental sciences, Bharathiar University, Coimbatore.

Muralidharan, S. Impact of agricultural practices on birds. Two lectures at SFSC, Coimbatore.

Muralidharan, S. "Population decline in Indian Avifauna. Are pesticides a factor? Need for coordinated approach". Lectures delivered at the Regional Workshops in Ahemedabad, Jaipur, Pune, Calcutta and Coimbatore.

Pramod, P. "Bird diversity of India' at the teachers training programme of CEE, Divyodaya Hall, Coimbatore, 29 July 2002.

Pramod, P. Invited lectures on 2, 3 and 24 May 2002 on "Birds and nature conservation" for the students of various schools in two nature camps arranged by the Vanasree nature Club of Poondi.

Pramod, P. 'Birds and Bird watching' at Dept. of Zoology, Bharatiyar University, 7 October 2002.

Pramod, P. 'Conservation of Forest and Wetlands: Role of students' at combined NSS camps of three schools conducted in Swathanthira School, Athipalayam, Coimbatore, 7 October 2002.

Pramod, P. 'Environmental problems of India' at the Red Cross Society, 29 July 2002.

Pramod, P. 'Landscape ecology and biodiversity Conservation' in winter school on health care management and diseases of wild and captive animals at Kerala Agricultural University, 5 November 2002.

Pramod, P. 'Role of Man in Nature' at Gopal Naidu Mat. Hr. Sec. School, 4 September 2002.

Pramod, P. Birds and bird watching. Lecture delivered at the 'Summer school for Creative writing and Communication' at Coimbatore for the School children, 11 April 2002.

Vijayan, L. "Conservation of birds in the Western Ghats and Andaman Nicobar islands" at the Nature Society of Singapore. 20 August 2002.

Vijayan, L. Biodiversity conservation with birds as indicators" as a part of the Wildlife week celebrations in the Nirmala College, Coimbatore. 8 October 2002.

Vijayan, L. Training workshop for Eco-development Committee in Silent Valley National Park, Participated as a resource person and gave lecture on "Birds and biodiversity conservation with special reference to Silent Valley". 26 March 2003.



Umamaheshwary

APPENDIX I. MEMBERS OF SACON SOCIETY

Mr. T.R. Baalu (President)
Honourable Minister
Ministry of Environment & Forests
Government of India
New Delhi

Mr. K.C. Misra, IAS (since November 2002)
Chairman, SACON-Governing Council
Secretary
Ministry of Environment and Forests
Govt. of India, Paryavaran Bhawan
CGO Complex, Lodi Road
New Delhi - 110 003

Mr A M Gokhale, IAS (up to October 2002)
Chairman, SACON-Governing Council
Additional Secretary
Ministry of Environment and Forests
Govt. of India, Paryavaran Bhawan
CGO Complex, Lodi Road
New Delhi - 110 003

Mr Y S Bhave, IAS
Jt. Secretary and Financial Advisor
Ministry of Environment and Forests
Govt. of India, Paryavaran Bhawan
CGO Complex, Lodi Road
New Delhi - 110 003

Mrs Girija Vaidyanathan, IAS (up to 14.8.2002)
Mr. S. Ramakrishnan, IAS (from 15.8.2002 - 3.12.2002)
Mr. S.P. Elangovan (since 4.12.2002)
Secretary to the Govt of Tamil Nadu
Dept. of Environment and Forests
Govt. of Tamil Nadu
Fort St.George , Chennai – 9

Rev Fr Dr S Ignacimuthu (up to 23 June 2002)
Vice-Chancellor
Member, Vice-Chancellor Conveners Committee
(since 24 June 2002)
Bharathiar University
Maruthamalai Road
Coimbatore - 641 046

Dr A R Rahmani
Director
Bombay Natural History Society
Hombill House, Shaheed Bhagat Singh Road
Bombay – 400 023

Dr Rahgavendra Gadagkar (up to 18.9.2002)
Dr. N.V. Joshi (since 19.9.2002)
Chairman
Centre for Ecological Sciences
Indian Institute of Sciences
Bangalore - 560 012

Mr J C Daniel
Honorary Secretary
Bombay Natural History Society
Hombill House
Shaheed Bhagat Singh Road
Bombay - 400 023

Mr K P Geethakrishnan, IAS (Retd)
K-15 Anna Nagar (East), Chennai 600 102

Dr B F Chhapgar
E/31 Cusrow Baug
Colaba Causeway, Mumbai – 400 005

Dr Pratap Saraiya
12-B Suneeta
B G Kher Marg
Mumbai – 400 006

Mr Cyrus Guzder
Airfreight Pvt. Ltd
Neville House, Ground Floor
Currimbhoy Road, Bellard Estate
Mumbai – 400 036

Dr Hari Gautam (up to 6.4.2002)
Dr. Arun Nivakagar
Chairman
University Grants Commission
Bahadurshah Zafar Marg
New Delhi – 110 002

Prof. B L Deekshatulu
10-3-123/3/1, East Maredpally
Secundrabad – 500 026 (AP)

Dr S Z Qasim
A - 15, Defence Colony
New Delhi - 110 024

Dr H Y Mohan Ram
194, SFS DDA FLATS
Mukherji Nagar
Delhi – 110 009

Mr B Vijayaraghavan IAS (Retd.)
Chairman
Chennai Snake Park
Raj Bhavan Post
Chennai - 600 022

Mr N R Krishnan IAS (Retd)
2nd Floor
18 Balaji Nagar, 2nd street
Royapetta
Chennai- 600 014

Dr S Kannaiyan (up to 10.10.2002)
Dr C Ramasamy (since 4.11.2002)
Vice Chancellor
Tamil Nadu Agricultural University
Coimbatore – 641 003

Mr Samar Singh, IAS
P-1, Hauz Khaz
New Delhi - 16

Prof Shekhar Singh
C-17 A, Munirka
New Delhi - 110 067

Mr Aasheesh Pitie
Bird Watchers' Society of Andhra Pradesh
8-2-545 "Prem Parvat"
Road No 7, Banjara Hills
Hyderabad – 500 034

Mr S S Ramachandra Raja
Wildlife Association of Ramnad District
58 PSK Nagar
Rajapalayam – 626 108
Tamil Nadu

Dr (Mrs) Priya Davidar
Salim Ali School of Ecology
Pondicherry University
R V Nagar, Kalapet,
Pondicherry - 605 014

Mr P Kannan
Plot No. 126, 14th Street
Choudhary Nagar
Valasaravakkam
Chennai – 87

Mr S A Hussain
"Hussain Manzil",
Anekere Road,
Karkala. - 574 104.
Karnataka

Dr Madhav Gadgil
Centre for Ecological Sciences
Indian Institute of Science
Bangalore – 560 012

Mr Zafer Futehally
No.2205 Oakwood Apartments
Jakkasandra Layout
Koramangla, 3rd Block, 8th Main Road
Bangalore – 560 034

Mr S K Pandey, IFS
Inspector of General of Forests
Ministry of Environment and Forests,
Paryavaran Bhawan, CGO Complex
New Delhi

Mr S R Mehta IFS
Principal Chief Conservator of Forests
Govt of Arunachal Pradesh
Itanagar - 791 111

Dr S A Chavan IFS
Mr. J.P. Agarwal
Mr. M.L. Sharma, IFS (since November 2002)
Principal Chief Conservator of Forests
Block No.14
Dr Jivraj Mehta Bhavan
Govt of Gujarat
Gandhi Nagar- 382 010

Mrs D S Variava
Director,
Bharat Tiles
32-B Samachar Marg
Mumbai - 400 023

Mr K P Karamchandani
503 Atur Terrace
Cuffe Parade, Coloba
Mumbai - 400 005

Dr M S Swaminathan
M S Swaminathan Research Foundation
3rd Cross Street
Taramani Institutional Area
Chennai - 600 113

Dr M K Ranjitsinh IAS (Retd)
Indian National Trust for Art and Cultural Heritage
(INTACH)
71, Lodi Estate
New Delhi – 110 003

Dr R N Singh
Director
National Environmental Engineering Research
Institute (NEERI), Nehru Marg
Nagpur – 440 020

Mr R Rajamani IAS (Retd)
8-2-585/A/1 Road No.9
Banjara Hills
Hyderabad - 500 034

Mr T K A Nair IAS (Retd)
Chairman
Public Enterprise Selection Board
Public Enterprise Bhawan
Block No 14, CGO Complex
New Delhi - 110 003

Dr K K Tiwari, Ex-Director
Zoological Survey of India
B – 278 Shahapura
Bhopal - 462 016
Madhya Pradesh

Mr N D Jayal IAS (Retd)
Co-ordinator
The Himalaya Trust
274/II, Vasant Vihar
Dehra Dun - 248 006

Mr Lavkumar Kacher
14 Jayant Society
Rajkot - 360 002
Gujrat

Mr Prakash Gole
Ecological Society
I/B Abhimanshree Housing Society
off; Pashan Road
Pune - 411 008

Dr Robert B Grubh
COSMOS, II Main Street
Christopher Nagar (Extension)
Nagercoil – 629 003

Mrs Tara Gandhi
C/o Mr. Gopalakrishna Gandhi
Holmenveien 4
0374-Oslo
Norway

Dr Digvijay Sinh
'The Palace'
Wankaner – 363 621
Gujarat

Mr Bittu Sahgal
Sanctuary Asia
602, Maker Chambers
V Nariman Point
Bombay- 400 021

Dr Ashish Kothari
Kalpavriksh, Apartment-5
Shri Dutta Krupa
908 Deccan Gymkhana
Pune - 411 004

Dr A N D Nanavati
C/o. S Nanavati
Sundervan Flat
Rasala Marg
Ahmedabad– 380 006

Mr. R G Soni
Principal Chief Conservator of Forests
Govt of Rajasthan
Van Bhawan, Jaipur 302 005

Mr S S Patnaik, IFS
Principal Chief Conservator of Forests
Andaman and Nicobar Islands, complex
Van Sadan
Port Blair - 744 102

Dr P Balasubramanian
Senior Scientist
Division of Terrestrial Ecology
SACON, Anaikatty
Coimbatore 641 108

Dr S Muralidharan
Senior Scientist
Division of Ecotoxicology
SACON
Anaikatty
Coimbatore 641 108

Dr V S Vijayan
Director and Member Secretary
SACON
Anaikatty
Coimbatore 641 108

AUDIT REPORT, SIGNIFICANT ACCOUNTING POLICIES AND NOTES FORMING PART OF ACCOUNTS

Ramanathan & Krishnakumar
CHARTERED ACCOUNTANTS

'ASHIRVAD'
22-A, R.R. SAMY LANE
COIMBATORE - 641 009
✆ : 2235999 & 2236394

Date:

AUDIT REPORT

We have examined the Balance Sheet of **SALIM ALI CENTRE FOR ORNITHOLOGY AND NATURAL HISTORY** as at 31.03.2003, the Income & Expenditure Account and Receipts & Payments Account for the year ended on that date, which are in agreement with the books of account maintained by the said Society. These financial statements are the responsibility of the Society's management. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with auditing standards generally accepted in India. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

We have obtained all the information and explanation, which to the best of our knowledge and belief were necessary for the purpose of audit.

In our opinion, proper books of account were kept by the Society so far as it appears from our examination of books, and proper returns adequate for the purposes of audit have been received.

Reference is drawn to:

i) Note. No. 5.1 of Schedule 24 'Significant Accounting Policies' wherein the Gratuity & Earned Leave Encashment have been provided on an estimate basis by the Management.

ii) Note No. 5.12 of Schedule 25 'Contingent Liabilities & Notes on Accounts', wherein the Management has made an excess contribution of Rs.5,06,138/- to the CPF Trust up to the audit year.

In our opinion and to the best of our information and according to the explanations given to us and subject to our above qualifications the said Accounts give a true and fair view:

i) in the case of Balance sheet, of the state of affairs of the above named institution as on 31.03.2003.

ii) in the case of Income & Expenditure account, of the excess of expenses over income for accounting year ending on 31.03.2003 and

iii) in the case of Receipts and Payments account, of the receipts and payments during the accounting year ending on 31.03.2003.

Coimbatore
28.07.2003

For Ramanathan & Krishnakumar
Chartered Accountants

S. Krishnakumar
Partner

FORM OF FINANCIAL STATEMENTS

Salim Ali Centre for Ornithology and Natural History, Anaikatty, Coimbatore 641 108.

SCHEDULES FORMING PART OF THE ACCOUNTS FOR THE YEAR ENDED 31.03.2003

Schedule 24. Significant Accounting Policies

1. Accounting Convention

The financial statements for the year are prepared on the basis of historical cost convention and on the accrual method of accounting as per the directives of Ministry of Finance vide.O.M.No.MDS/PA/176/739. Accordingly, the information is furnished in the new format prescribed.

2. Fixed Assets

2.1 Fixed assets are stated at cost of acquisition inclusive of inward, freight, duties, taxes and incidental/ direct expenses related to acquisition wherever applicable.

2.2 In respect of construction, the related pre-operational expenses are included in the value of the asset capitalized.

2.3 Fixed assets to the tune of Rs.11,06,098/- received during 2000 from the sponsors (UNDP) of the one of the projects of SACON, namely 'Inland Wetlands of India' have been capitalized during the year under audit. Capital reserve has been credited correspondingly.

3. Depreciation

3.1 As per the above referred guidelines of the Ministry of Finance, depreciation is provided during the year on the straight line basis as per the rates specified in the Companies Act, 1956. Depreciation on library books and journals has been provided for full year although the receipt of the same was spread over during the year.

3.2 Depreciation up to 31.3.2002 has been accounted as prior period expenditure in the Income and Expenditure account.

3.3 In respect of additions/deductions from fixed assets during the year, depreciation is charged on pro-rata basis.

3.4 Depreciation is provided on all assets including on those costing less than Rs.5000/-.

4. Government grants/subsidies

4.1 Government grants received during the year by the Centre and the projects are accounted on realizable basis.

4.2 The consultancy income received by the Division of Environmental Impact Assessment (EIA) was also accounted on realizable basis since the same has been considered as subsidy received by one of the projects of SACON.

4.3 The grants/subsidy received during the year have been treated as revenue income and have been credited to the Income and Expenditure account. Till last year, the grant/subsidy was taken to the Capital fund to which the excess of income over expenditure/expenditure over income was added/deducted.

5. Retirement benefits

5.1 Liability towards gratuity and earned leave encashment has been reported based on the information furnished by the management and not on actuarial basis.

5.2 Provision for accumulated leave encashment benefit to the employees has been computed on the assumption that employees are entitled to receive the benefit as at each year end.

Jayashree Muralidharan
Senior Finance Officer
Sálim Ali Centre for Ornithology
And Natural History
Anaikatty, Coimbatore - 641108

Dr. V.S. Vijayan
Director
Sálim Ali Centre for Ornithology
and Natural History
Anaikatty, Coimbatore - 641108

For Ramanathan & Krishnakumar
Chartered Accountants

S. Krishnakumar
Partner

FORM OF FINANCIAL STATEMENTS

Salim Ali Centre for Ornithology and Natural History, Anaikatty, Coimbatore 641 108.

SCHEDULES FORMING PART OF THE ACCOUNTS FOR THE YEAR ENDED 31.03.2003

Schedule 25. Contingent liabilities and Notes on Accounts

1. Contingent Liabilities

1.1 As per the SACON Scientific Career Improvement Rules, the Scientific staff are eligible for a five year assessment and promotion declared, if found deserving. Accordingly, the assessment of the staff for 1992-97 has been done during the year and Rs.4,75,515/- has been disbursed to the staff as arrears. The next assessment period is 1997-2002 and hence, the assessment is due during the year under audit. As the assessment procedures takes a long duration the arrears payable to the scientific staff in the event of their assessment being positive, due not provided since the amount is indeterminate.

1.2 Two of the scientific staff whose services were terminated during 1996, have taken the matter to the Court and it is pending. Hence, no provision has been made on this account.

2. Capital commitments

2.1 The Centre has received an assistance of Rs.15 lakhs during 1999-2000, from Ministry of Environment and Forests, Government of India towards the construction of quarters and since the construction could not be completed the amount has been carried over thereafter. As the contract for the same has not yet been materialized, the amount due for the construction has not been provided. However, the pre-operational expenses has been capitalized and shown under Building work-in-progress.

2.2 The Centre is registered with the DSIR for the purpose of availing customs duty in terms of Government Notification No.5196, dated the 23 July 1996 and the Central Excise Duty exemption in terms of Government Notification No.19/97 dated the 1 March 1997. Hence, no provision towards the customs and excise duties has been provided for the import of goods for which advance payment has been made during the year.

3. Taxation

3.1 No provision for Income-tax has been considered since the centre is exempted under section 11 of the Income-tax Act, 1961 for the surplus of the grant.

3.2 The Centre is also exempted under section 80-G in respect of donations to the Centre.

4. Remuneration to auditors

Audit fees of Rs.19440/- has been provided towards the fee payable to the statutory auditors for 2002-03.

5. Others

5.1 All payments towards advances and deposits for which value by way of supply/service to be received are carried over in the Balance Sheet as items of advance.

5.2 The consolidated Balance Sheet along with the Receipts and Payments Account of the projects duly certified also form part of the Accounts of the Institution and the Audit Report covers the Accounts of the Project also.

5.3 The Institution maintains Stock Registers for the movement of assets, stores, vehicles and other consumables and the same is updated up to 31.3.2003.

5.4 As per the guidelines issued by the Ministry of Finance, during the year the receipts and payments for the short-term research projects funded by various agencies have been shown under Schedule 3-Earmarked/Endownment funds. Till last year such short-term funds after appropriating for the year's expenditure were shown under other sundry liabilities in the Balance sheet.

5.5 The expenditure reported for the year is for 13 months, since the financial statements for 2001-02 was prepared and presented on cash basis of accounting.

5.6 The previous year figures have been retained as it is and only the current year figures have been given on accrual basis.

5.7 During the year, the Centre has condemned assets worth Rs.736740/- (cost) after following the due procedures as stipulated in the SACON Finance Manual.

5.8 The Centre has received US $ 25000 from the UNDP – PDF A grant for the preparation of the project proposal entitled "Conservation and sustainable use of globally significant threatened wetlands". The project could not be launched as the wetland sites to be taken up for the study was not finalized during the year under audit. The matter is being discussed and finalized with the Ministry of Environment and Forests, Government of India and the activity would start by the middle of the year 2003-04.

5.9 The Centre was awarded a project entitled 'Effects of habitat fragmentation on the genetic, parasitological and reproductive status of Lion-Tailed-Macaques in the Anamalai Hills, Western Ghats' by German Volkswages-foundation. Although the project commenced its activities during 2000-01, no activities could be carried over during 2002-03. Since the samples collected for parasites analysis during earlier years got delayed. The results could be obtained only during the end of 2002-03 and the collection of samples has been resumed during 2003-04.

5.10 The unspent balance of Rs.55747/18 of completed projects transferred to the Centre during 2001-02 continue to remain in the books as outstanding liability. The expenditure still to be incurred in those projects have not been included in the books due to the uncertainty attached to the receipt of the balance grant from the sponsors.

5.11 The Utilisation Certificate (UC) for 2002-03 has been submitted to the sponsors for the Centre and ongoing projects. The expenditure reflected in the UC includes the committed expenditure based on the requirement that ought to have been met had the funds have been released in uniform intervals by the sponsors in order to achieve the objectives of the project during the year under

audit. However, the expenditure accounted on accrual basis in the Income and Expenditure account is based on the actual bills. Hence, to that extent there will be a difference in the expenditure shown in the UC and the financial statements.

5.12 The Centre has contributed Rs.5,75,038/- to SACON CPF Trust towards the Centre's contribution, interest thereon and interest on the employees subscription. The contribution of Rs.5,75,038/- has been arrived at after adjusting for the interest on Fixed deposits and SB account, actually received during the year. The accrued interest on Fixed deposits of SACON CPF Trust to the extent of Rs.5,06,438/- has since been transferred to SACON Account.

5.13 The assets have been physically verified as on 31.3.2003 and no shortage or excess has been found.

5.14 The Centre does not hold any obsolete or unusable asset as on 31.3.2003, except some minor assets of insignificant value. The condemnation procedures for the same is being in process.

6. Corresponding figures for the previous year have been regrouped/rearranged, wherever necessary.

7. Schedules 1 to 25 are annexed to and form an integral part of the Balance Sheet as at 31st March 2003 and the Income and Expenditure Account for the year ended on that date.

Jayashree Muralidharan
Senior Finance Officer
Sálim Ali Centre for Ornithology
And Natural History
Anaikatty, Coimbatore - 641108

Dr. V.S. Vijayan
Director
Sálim Ali Centre for Ornithology
and Natural History
Anaikatty, Coimbatore - 641108

For Ramanathan & Krishnakumar
Chartered Accountants

S. Krishnakumar
Partner

FINANCIAL STATEMENTS OF SACON AND PROJECTS

FORM OF FINANCIAL STATEMENTS (NON-PROFIT ORGANISATIONS)
Name of Entity: Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore
BALANCE SHEET AS AT 31.03.2003

(Amount - Rs.)

	Schedule	Current Year	Previous Year
CORPUS/CAPITAL FUND AND LIABILITIES			
CORPUS / CAPITAL FUND	1	762518.00	477393.00
RESERVES AND SURPLUS	2	37134071.85	46213499.57
EARMARKED/ENDOWMENT FUNDS	3	497174.00	71572.00
SECURED LOANS AND BORROWINGS	4	2500.00	2500.00
UNSECURED LOANS AND BORROWINGS	5	0.00	0.00
DEFERRED CREDIT LIABILITIES	6	0.00	0.00
CURRENT LIABILITIES AND PROVISIONS	7	4861705.45	1728504.70
TOTAL		**43257969.30**	**48493469.27**
ASSETS			
FIXED ASSETS	8	36861500.05	44108627.42
INVESTMENTS-FROM EARMARKED/ENDOWMENT FUNDS	9	0.00	0.00
INVESTMENTS-OTHERS	10	0.00	0.00
CURRENT ASSETS, LOANS, ADVANCES ETC.	11	6396469.25	4384841.85
MISCELLANEOUS EXPENDITURE (to be extent not written off or adjusted)		0.00	0.00
TOTAL		**43257969.30**	**48493469.27**
SIGNIFICANT ACCOUNTING POLICIES	24		
CONTINGENT LIABILITIES AND NOTES ON ACCOUNTS	25		

For Ramanathan & Krishnakumar
Chartered Accountants

S. Krishnakumar
Partner

28/7/2003

Jayashree Muralidharan
Senior Finance Officer
Salim Ali Centre for Ornithology
And Natural History
Anaikatty, Coimbatore - 641108

Dr. V.S. Vijayan
Director
Salim Ali Centre for Ornithology
and Natural History
Anaikatty, Coimbatore - 641108

FORM OF FINANCIAL STATEMENTS (NON-PROFIT ORGANISATIONS)

Name of Entity: Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31.03.2003

(Amount - Rs.)

	Current Year		Previous Year	
SCHEDULE 1. CORPUS/ CAPITAL FUND:				
Balance as at the beginning of the year	477393.00		292663.00	
Add: Contributions towards Corpus/Capital Fund	275125.00		184730.00	
Add: Donation received during the year	10000.00		0.00	
Add/Deduct): Balance of net income/(expenditure) transferred from the Income and Expenditure A/c	0.00		0.00	
BALANCE AS AT THE YEAR - END		**762518.00**		**477393.00**
SCHEDULE 2. RESERVES AND SURPLUS:				
1. Capital Reserve:				
As per last Account				
Addition during the year				
Less: Deductions during the year				
2. Revaluation Reserve:				
As per last Account				
Addition during the year				
Less: Deductions during the year				
3. Special Reserves:				
As per last Account				
Addition during the year				
Less: Deductions during the year				
4. General Reserve:				
As per last Account	46180476.57		44983370.87	
Add: Amount transferred from SACON Hostel account	26349.00		7140.00	
Add: Amount transferred from SACON Membership a/c	6674.00		0.00	
Add: Grant received during the year	0.00		8500000.00	
Total	**46213499.57**		**53490510.87**	
Less: Deductions during the year	8342687.72		7330719.48	
	37870811.85		**46159791.39**	
Less: Assets written off during the year	736740.00		2039.00	
Add: Amount transf. from completed projects	0.00		55747.18	
TOTAL		**37134071.85**		**46213499.57**

For Ramanathan & Krishnakumar
Chartered Accountants

S. Krishnakumar
Partner

Jayashree Muralidharan
Senior Finance Officer
Sálim Ali Centre for Ornithology
And Natural History
Anaikatty, Coimbatore - 641108

Dr. V.S. Vijayan
Director
Sálim Ali Centre for Ornithology
and Natural History
Anaikatty, Coimbatore - 641108

FORM OF FINANCIAL STATEMENTS (NON-PROFIT ORGANISATIONS)

Name of Entity: Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31.03.2003

(Amount - Rs.)

SCHEDULE 3. EARMARKED/ ENDOWMENT FUNDS	FUND-WISE BREAK UP					TOTALS	
	Fund received forAndaman Forest Dept. in-situ conservation	Fund received for NBSAP	Fund received for Biodiversity thermatic workshop	Fund received for Tragopan Project	Fund received for ENVIS Centre	Current year	Previous year
a) Opening balance of the funds	6194.00	38.00	45340.00	20000.00	0.00	71572.00	133830.00
b) Additions to the Funds:							
i. Donations/ grants	398921.00	15000.00	75000.00	0.00	317500.00	806421.00	197711.00
ii. Income from investments made on account of funds							
iii. Other additions (specify nature)							
1. Refund of Unspent adv.							
TOTAL (a+b)	**405115.00**	**15038.00**	**120340.00**	**20000.00**	**317500.00**	**877993.00**	**331541.00**
c) **Utilisation/Expenditure towards objectives of funds**							
i. Capital Expenditure							
- Fixed Assets (at cost)							
- Advances							
Total							
ii. Revenue Expenditure							
- Salaries, Wages and allowance etc.	46500.00	5000.00	33226.00	0.00	0.00	84726.00	41490.00
- Rent	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Other Administrative expenses	0.00	0.00	0.00	0.00	0.00	0.00	0.00
- Other Expn	220924.00	30.00	75139.00	0.00	0.00	296093.00	218479.00
TOTAL (c)	267424.00	5030.00	108365.00	0.00	0.00	380819.00	259969.00
NET BALANCE AS ATTHEYEAR-END (a+b-c)	**137691.00**	**10008.00**	**11975.00**	**20000.00**	**317500.00**	**497174.00**	**71572.00**

Notes

1. Disclosures shall be made under relevant heads based on conditions attaching to the grants.
2. Plan Funds received from the Central / State Governments are to be shown as separate Funds and not to be mixed up with any other Funds.

For Ramanathan & Krishnakumar
Chartered Accountants

S. Krishnakumar
Partner

Ramanathan & Krishnakumar COIMBATORE 641 028. Chartered Accountants

28/7/2003

Jayashree Muralidharan
Senior Finance Officer
Salim Ali Centre for Ornithology
And Natural History
Anaikatty, Coimbatore - 641108

Dr. V.S. Vijayan
Director
Salim Ali Centre for Ornithology
and Natural History
Anaikatty, Coimbatore - 641108

FORM OF FINANCIAL STATEMENTS (NON-PROFIT ORGANISATIONS)

Name of Entity Salim Ali Centre for Ornithology and Natural History, Anaikatty PO Coimbatore 641 108

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31.3.2003

(Amount Rs.)

	Current Year		Previous Year	
SCHEDULE 4. SECURED LOANS AND BORROWINGS:				
1. Central Government				
2. State Government (Specify)				
3. Financial Institutions				
a. Term Loans				
b. Interest accrued and due				
4. Banks:				
a. Term Loans				
- Interest accrued and due				
b. Other Loans (Specify)				
- Interest accrued and due				
5. Other Institutions and Agencies				
6. Debentures and Bonds				
7. Others (Specify)				
Received from Corpus Fund for Bandhipur		2500.00		2500.00
TOTAL		**2500.00**		**2500.00**
SCHEDULE 7. CURRENT LIABILITIES AND PROVISIONS				
A. CURRENT LIABILITIES				
1. Acceptances	0.00		0.00	
2. Sundry Creditors:				
a. For Goods	0.00		0.00	
b. Others (Schedule 7 A 2.b)	1794015.70		1728504.70	
3. Advances Received	0.00		0.00	
4. Interest accrued but not due on:	0.00		0.00	
b. Unsecured Loans / borrowings	0.00		0.00	
5. Statutory Liabilities				
a. Overdue	0.00		0.00	
b. Others	0.00		0.00	
TOTAL (A)		**1794015.70**		**1728504.70**
B. PROVISIONS				
1. For Taxation	0.00		0.00	
2. Gratuity	1327640.00		0.00	
3. Superannuation / Pension	0.00		0.00	
4. Accumulated Leave Encashment	1030258.00		0.00	
5. Trade Warranties / Claims	0.00		0.00	
6. Others (Specify)	709791.75		0.00	
TOTAL (B)		**3067689.75**		0.00
TOTAL (A+B)		**4861705.45**		**1728504.70**
SCHEDULE 7 A.2.b. CURRENT LIABILITIES AND PROVISIONS				
A. CURRENT LIABILITIES				
A1. EMD and Retention Money	80075.00		76082.00	
A2. Liabilities of completed projecats				
A2a. Unspent amount	179097.35		273408.35	
A2b. Assets transferred to SACON	1354680.35		1354680.35	
A3. Leave salary contribution recovered	60634.00		24334.00	
A4. Recoveries from Staff	119529.00		0.00	
TOTAL		**1794015.70**		**1728504.70**

FORM OF FINANCIAL STATEMENTS (NON-PROFIT ORGANISATIONS)

Name of Entity Salim Ali Centre for Ornithology and Natural History, Anaikatty PO Coimbatore 641 108

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31.3.2003

DESCRIPTION	GROSS BLOCK				DEPRECIATION				NET BLOCK	
	Cost/valuation as at beginning of the year	Additions during the year	Deductions during the year	Cost/value at the year-end	As at the beginning of the year	For the year	On deduct-ions during the year	Total up to the year-end	As at the current year-end	As at the previous year-end
SCHEDULE 8. FIXED ASSETS										
1. LAND:										
a) Freehold	4168840.05	0.00	0.00	4168840.05	0.00	0.00	0.00	0.00	4168840.05	4168840.05
b) Leasehold	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2. BUILDINGS:										
a) Freehold Land	16805952.05	111237.00	0.00	16917189.05	1096496.00	274992.00	0.00	1371488.00	15545701.05	15709456.05
b) Leasehold Land	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
c) Ownership Flats/Premises	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d) Superstructures on Land not belonging to the entity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3. PLANT MACHINERY&EQUIPMENT	6150388.54	637286.00	50500.00	6737154.54	2292448.00	310362.00	23392.00	2579416.00	4157738.54	3908421.54
3.1 Minor Equipment	32642.00	0.00	0.00	32642.00	3321.00	1551.00	0.00	4872.00	27770.00	29321.00
3.2. Kitchen Equipment	2731.00	67405.00	0.00	70136.00	1051.00	2911.00	0.00	3962.00	66174.00	1680.00
3.3. Equipment of completed projects	1354680.35	0.00	0.00	1354680.35	459093.00	64471.00	0.00	523564.00	831116.35	895587.35
4. VEHICLES	1067547.00	0.00	0.00	1067547.00	628539.00	58963.00	0.00	687502.00	380045.00	439008.00
5. FURNITURE, FIXTURES.	1370213.40	336073.00	0.00	1706286.40	486261.00	103332.00	0.00	589593.00	1116693.40	883952.40
6. OFFICE EQUIPMENT	125613.00	0.00	0.00	125613.00	25217.00	8881.00	0.00	34098.00	91515.00	100396.00
7. COMPUTER/PERIPHERALS	3184729.00	406982.00	686240.00	2905471.00	2716730.00	191462.00	680179.00	2228013.00	677458.00	1154238.00
8. ELECTRIC INSTALLATIONS	356760.00	93600.00	0.00	950360.00	181175.00	66411.00	0.00	247586.00	702774.00	675585.00
9. LIBRARY BOOKS	6588519.03	1816490.63	0.00	8405009.66	1810109.00	313191.00	0.00	2123300.00	6281709.66	4778410.03
10. Tree plantation	144374.00	0.00	0.00	144374.00	0.00	0.00	0.00	0.00	144374.00	144374.00
10.1 Campus Development	1675946.00	0.00	0.00	1675946.00	55942.00	27318.00	0.00	83260.00	1592686.00	1620004.00
10.2 Solar Power fencing	546724.00	0.00	0.00	546724.00	5527.00	8911.00	0.00	14438.00	532286.00	541197.00
10.3. Leased line Connection	14688.00	532657.00	0.00	547345.00	0.00	31226.00	0.00	31226.00	516119.00	14688.00
B. CAPITAL WORK-IN PROGRESS	18300.00	10200.00	0.00	28500.00	0.00	0.00	0.00	0.00	28500.00	18300.00
TOTAL	**44108627.42**	**4011930.63**	**736740.00**	**47383818.05**	**9761907.00**	**1463982.00**	**703571.00**	**10522318.00**	**36861500.05**	**35083458.42**

(Note to be given as to cost of assets on hire purchase basis included above)

For Ramanathan & Krishnakumar
Chartered Accountants

S. Krishnakumar
Partner

Ramanathan & Krishnakumar Chartered Accountants COIMBATORE 641 029.

28/7/2003

Jayashree Muralidharan
Senior Finance Officer
Salim Ali Centre for Ornithology
And Natural History
Anaikatty, Coimbatore - 641108

Dr. V.S. Vijayan
Director
Salim Ali Centre for Ornithology
and Natural History
Anaikatty, Coimbatore - 641108

FORM OF FINANCIAL STATEMENTS (NON-PROFIT ORGANISATIONS)
Name of Entity: Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore
SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31.03.2003

(Amount - Rs.)

	Current Year		Previous Year	
SCHEDULE 11. CURRENT ASSETS, LOANS, ADVANCES ETC.				
A. CURRENT ASSETS:				
1. Inventories:				
a) Stores and Spares				
b) Loose Tools				
c) Stock-in-trade				
Finished Goods				
Work-in-progress				
Raw Materials				
2. Sundry Debtors:				
a) Debts Outstanding for a period exceeding six months (Sch.11.2 a)	0.00		0.00	
b) Others	0.00		0.00	
3. Cash balances in hand (including cheques /drafts and imprest)	15000.00	15000.00	15000.00	15000.00
4. Bank Balances:				
a) With Scheduled Banks:				
- On Current Accounts				
- On Deposit Accounts (includes margin money)				
- On Savings Accounts				
7300	4197548.40		2658488.53	
7301	689971.00		446319.00	
7309	46317.00		26349.00	
7314	7767.00		6674.00	
7320	10000.00		0.00	3137830.53
011 000 50205	20252.85	4971856.25		
b) With non-Scheduled Banks:				
- On Current Accounts				
- On Deposit Accounts				
- On Savings Accounts				
5. Post Office-Savings Accounts				
TOTAL (A)		**4986856.25**		**3152830.53**

For Ramanathan & Krishnakumar
Chartered Accountants

S. Krishnakumar
Partner

Jayashree Muralidharan
Senior Finance Officer
Sálim Ali Centre for Ornithology
And Natural History
Anaikatty, Coimbatore - 641108

Dr. V.S. Vijayan
Director
Sálim Ali Centre for Ornithology
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FORM OF FINANCIAL STATEMENTS (NON-PROFIT ORGANISATIONS)
Name of Entity: Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore
SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31.03.2003

(Amount - Rs.)

	Current Year		Previous Year	
SCHEDULE 11 - CURRENT ASSETS, LOANS, ADVANCES ETC. (Contd.)				
B. LOANS, ADVANCES AND OTHER ASSETS				
1. Loans:				
a) Staff	0.00		0.00	
b) Other Entities engaged in activities/objectives similar to that of the Entity	0.00		0.00	
c) Other (specify) - Loan from SACON Corpus Fund	76074.00	76074.00	31074.00	31074.00
2. Advances and other amounts recoverable in cash or in kind or for value to be received:				
a) On Capital Account				
b) Prepayments	39718.00		0.00	
c) Others (Schedule 11.B.2.C)	1290073.00		1200172.32	
		1329791.00		1200172.32
3. Income Accrued:				
a) On Investments form Earmarked/ Endowment Funds				
b) On Investments - Others				
c) On Loans and Advances				
d) Others - License fees (includes income due unrealised Rs.....)		2983.00		0.00
4. Claims Receivable - TDS on Contract		765.00		765.00
TOTAL (B)		1409613.00		1232011.32
TOTAL (A + B)		**6396469.25**		**4384841.85**

For Ramanathan & Krishnakumar
Chartered Accountants

S. Krishnakumar
Partner

Jayashree Muralidharan
Senior Finance Officer
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Dr. V.S. Vijayan
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Anaikatty, Coimbatore - 641108

FORM OF FINANCIAL STATEMENTS (NON-PROFIT ORGANISATIONS)
Name of Entity: Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore
INCOME AND EXPENDITURE ACCOUNT FORTHEYEAR ENDED 31.03.2003

(Amount - Rs)

	Schedule	Current Year	Previous Year
INCOME			
Income from Sales / Services	12	0.00	0.00
Grants/ Subsidies	13	14800000.00	0.00
Fees/Subscriptions	14	800.00	6565.00
Income from Investments (Income on Invest. from earmarked/endow. Funds transferred to Funds)	15	0.00	0.00
Income from Royalty, Publication etc.	16	26064.00	19264.00
Interest Earned	17	132789.95	128131.66
Other Income	18	72322.00	28393.00
Increase/ (decrease) in stock of Finished goods and works in progress	19	0.00	0.00
TOTAL (A)		**15031975.95**	**182353.66**
EXPENDITURE			
Establishment Expenses	20	6036803.00	4436710.00
Other Administrative Expenses etc.	21	4385506.67	3076363.14
Expenditure on Grants, Subsidies etc.	22	0.00	0.00
Interest	23	0.00	0.00
Depreciation (Net Total for the year-end - corresponding to Schedule 8)		760411.00	0.00
TOTAL (B)		**11232720.67**	**7513073.14**
Balance being excess of Income over Expenditure (A-B)			
Transfer to Special Reserve (Specify each)		**3799255.28**	**-7330719.48**
Transfer to / from General Reserve			
1. Previous year Expenditure under salaries & Establishment		498335.00	0.00
2. Retirement benefits accr. Upto 31.03.2002		1881701.00	0.00
3. Depreciation upto 31.03.2002		9761907.00	0.00
BALANCE BEING SURPLUS/(DEFICIT) CARRIEDTO CORPUS/ CAPITAL FUND		**-8342687.72**	**-7330719.48**
SIGNIFICANT ACCOUTING POLICIES	24		
CONTINGENT LIABILITIES AND NOTES ON ACCOUNTS	25		

For Ramanathan & Krishnakumar
Chartered Accountants

S. Krishnakumar
Partner

Ramanathan & Krishnakumar COIMBATORE 641 018 Chartered Accountants

Jayashree Muralidharan
Senior Finance Officer
Sálim Ali Centre for Ornithology
And Natural History
Anaikatty, Coimbatore - 641108

Dr. V.S. Vijayan
Director
Sálim Ali Centre for Ornithology
and Natural History
Anaikatty, Coimbatore - 641108

FORM OF FINANCIAL STATEMENTS (NON-PROFIT ORGANISATIONS)
Name of Entity: Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore
SCHEDULES FORMING PART OF INCOME & EXPENDITURE FORTHE YEAR ENDED 31.03.2003

(Amount- Rs.)

	Current Year	Previous Year
SCHEDULE 12 - INCOME FROM SALES/ SERVICES		
1. Income from Sales		
a) Sale of Finished Goods	0.00	0.00
b) Sale of Raw Material	0.00	0.00
c) Sale of Scraps	0.00	0.00
2. Income from Services		
a) Labour and Processing Charges	0.00	0.00
b) Professional /Consultancy Services	0.00	0.00
c) Agency Commission and Brokerage	0.00	0.00
d) Maintenance Services (Equipment/Property)	0.00	0.00
e) Others (Specify)	0.00	0.00
TOTAL	0.00	0.00
SCHEDULE 13 - GRANTS/SUBSIDIES		
(Irrevocable Grants & Subsidies Received)		
1. Central Government	14800000.00	0.00
2. State Government(s)	0.00	0.00
3. Government Agencies	0.00	0.00
4. Institutions/Welfare Bodies	0.00	0.00
5. International Organisations	0.00	0.00
6. Others (Specify)	0.00	0.00
TOTAL	**14800000.00**	**0.00**
SCHEDULE 14 - FEES/SUBSCRIPTIONS		
1. Entrance Fees		
2. Annual Fees/Subscriptions		
3. Seminar / Program Fees		
4. Consultancy Fees		
5. Others (Specify)		
Membership fees	800.00	6565.00
TOTAL	**800.00**	**6565.00**
Note:- Accounting Policies towards each item are to be disclosed		
SCHEDULE 16 - INCOME FROM ROYALTY, PUBLICATION ETC.		
1. Income from Royalty	0.00	0.00
2. Income from Publications	0.00	0.00
3. Others (specify)	0.00	0.00
3.1. License fees from Hostel	26064.00	19264.00
TOTAL	**26064.00**	**19264.00**

For Ramanathan & Krishnakumar
Chartered Accountants

S. Krishnakumar
Partner

Jayashree Muralidharan
Senior Finance Officer
Sálim Ali Centre for Ornithology
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Anaikatty, Coimbatore - 641108

Dr. V.S. Vijayan
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Sálim Ali Centre for Ornithology
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Anaikatty, Coimbatore - 641108

FORM FINANCIAL STATEMENTS (NON-PROFIT ORGANISATIONS)
Name of Entity: Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore
SCHEDULES FORMING PART OF INCOME & EXPENDITURE FOR THE PERIOD/YEAR ENDED 31.03.2003

	Current Year	Previous Year
SCHEDULE 17 - INTEREST EARNED		
1. On Term Deposits:		
a. With Scheduled Banks	0.00	0.00
b. With Non-Scheduled Banks	0.00	0.00
c. With Institutions	0.00	0.00
d. Nationalised Bank	85047.00	97568.00
2. On Savings Accounts:		
a. With Scheduled Banks	0.00	0.00
b. With Non-Scheduled Banks	0.00	0.00
c. Post Office Savings Accounts	0.00	0.00
d. Nationalised Bank	47742.95	14697.66
3. On Loans:		
a. Employees / Staff	0.00	14866.00
b. Others	0.00	1000.00
4. Interest on Debtors and Other Receivables	0.00	0.00
TOTAL	**132789.95**	**128131.66**
Note:- Tax deducted at source to be indicated		
SCHEDULE 18 - OTHER INCOME		
1. Profit on Sale/disposal of Assets:		
a. Owned assets	0.00	0.00
b. Assets acquired out of grants, or received free of cost	0.00	0.00
2. Export Incentives realized	0.00	0.00
3. Fees for Miscellaneous Services	31215.00	28393.00
4. Miscellaneous Income	41107.00	0.00
TOTAL	**72322.00**	**28393.00**
SCHEDULE 19 - INCREASE/(DECREASE) IN STOCK OF FINISHED GOODS & WORK IN PROGRESS		
a. Closing stock	0.00	0.00
- Finished Goods	0.00	0.00
- Work-in-progress	0.00	0.00
b. Less: Opening Stock	0.00	0.00
- Finished Goods	0.00	0.00
- Work-in-progress	0.00	0.00
NET INCREASE/(DECREASE) (a-b)	0.00	0.00
SCHEDULE 20 - ESTABLISHMENT EXPENSES		
a. Salaries and Wages	3125632.00	2800288.00
b. Allowances and Bonus	1727335.00	1366241.00
c. Contribution to Provident Fund	610639.00	269657.00
d. Contribution to Other Fund (specify)	0.00	0.00
e. Staff Welfare Expenses		
f. Expenses on Employees' Retirement and Terminal Benefits	617197.00	524.00
g. Others - Expenditure under Hostel	6000.00	
TOTAL	**6086803.00**	**4436710.00**

FORM FINANCIAL STATEMENTS (NON-PROFIT ORGANISATIONS)
Name of Entity: Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore
SCHEDULES FORMING PART OF INCOME & EXPENDITURE FOR THE PERIOD/YEAR ENDED 31.03.2003

	Current Year	Previous Year
SCHEDULE 21 - OTHER ADMINISTRATIVE EXPENSES ETC		
a. Misc. consumable stores	129727.00	69047.00
b. Electricity and power	298675.00	130866.00
c. Water charges	15895.00	4600.00
d. Insurance	16378.00	12223.00
e. Repairs and Maintenance of Buildings	72441.00	102264.00
f. Rent, Rates and Taxes	43674.00	17288.00
g. Vehicles Running and Maintenance	201873.00	151146.00
h. Postage, Telephone and Communication Charges	295429.47	297236.54
i. Printing and Stationery	24645.00	28378.00
j. Traveling and Conveyance Expenses	710955.00	658138.00
k. Expenses on Seminar / Workshops	208275.70	103251.00
l. Subscription Expenses	3787.00	4725.00
m. Expenses on Fees	520.00	0.00
n. Auditors Remuneration	87961.00	39515.00
o. Hospitality Expenses	20401.00	13862.00
p. Professional Charges	70000.00	0.00
q. Others (specify)		
q1. Xerox	103.00	2541.00
q2. Local Travel	30189.00	5545.00
q3. Gardening & Office furnishing	4300.00	13860.00
q4. Liveries	2572.50	1017.00
q5. Fuel for Generator	22010.00	17516.00
q6. Other Misc.	2385.00	4749.00
q7. Repair & Maintenance of Furniture	1650.00	0.00
q8. Hostel Expenditure	12492.00	20429.00
q9. Research Contingencies	1017252.00	640288.00
q10. Watch & Ward	296606.00	219694.00
q11. Equipment Maintenance	207112.00	111675.60
q12. Recruitment Expenditure	89996.00	0.00
q13. Honorarium	4900.00	2050.00
q14. Reports	170970.00	91209.00
q15. Solar Power Fencing Maintenance	1785.00	3300.00
q16. Vehicle Hire Charges	320547.00	289200.00
q17. Website	0.00	20250.00
q18. Audit fees under Hostel account	0.00	500.00
TOTAL	**4385506.67**	**3076363.14**

For Ramanathan & Krishnakumar
Chartered Accountants

S. Krishnakumar
Partner

28/3/2003

Jayashree Muralidharan
Senior Finance Officer
Sálim Ali Centre for Ornithology
And Natural History
Anaikatty, Coimbatore - 641108

Dr. V.S. Vijayan
Director
Sálim Ali Centre for Ornithology
and Natural History
Anaikatty, Coimbatore - 641108

Salim Ali Centre for Ornithology and Natural History, Anaikatty, Coimbatore
Receipts and Payments account for the period ended 31.03.2003

As at 31.03.2002	Receipts	Current year ended 31.03.2003	Current Year ended 31.03.2003	As at 31.03.2002	Receipts	Current year ended 31.03.2003	Current Year ended 31.03.2003
					Revenue Expenditure		
	To Unspent Balance of Grant Opening Balance			4243213.00	Salaries & Establishment (Sch.1)	5426168.00	
				657447.00	Traveling Expenses	590125.00	
33416.24	SBI Coimbatore SB A/c.	18956.90		590763.00	Research contingency (Sch.A)	934095.00	
15000.00	Cash on Hand - Imprest	15000.00					
28839.58	IOB-Savings Bank A/c.	2639531.63		297236.54	Postage & Telephones (Sch.2)	287735.72	
3500000.00	Term deposit with IOB	0.00	2673488.53				
				130866.00	Electricity charges	273964.00	
8500000.00	To Grant received from MoEF		14800000.00	28378.00	Printing & Stationery (Sch.3)	24645.00	
	To Revenue Income			154436.00	Vehicle Maintenance (Sch.4)	204198.00	
127577.66	Interest received	118680.95					
0.00	Miscellaneous receipt	1620.00		87400.00	Reports & Publications	80500.00	
2611.00	License fee for quarters collected from employee	2640.00		93400.00	Wages	127824.00	
25782.00	Free medical treatment	26111.00	149051.95	100421.00	Amount paid to Security service towards house keeping staff	129214.00	
	To Refund of Advances/ Recoveries			219694.00	Watch & ward Expenses	273972.00	
				103251.00	Extension Programme	210375.70	
143000.00	Advances/Deposits (sch.12)	34978.00		44015.00	Audit fees (Sch.5)	58801.00	
3450.00	Festival Advance	4650.00	39628.00	0.00	Other Professional charges (Sch.6)	70000.00	
275711.00	TDS on salaries	544288.00					
17220.00	Professional Tax	7950.00		111675.60	Equipment Maintenance	229233.00	
723797.00	CPF recoveries	653015.00		274153.00	Miscellaneous Expenses (Sch.7)	349827.50	
111070.00	Group Insurance	113753.00					
100513.00	Amount collected from employees for payment to IOB	159323.00		0.00	Recruitment Expenses	89996.00	
				289200.00	Vehicle Hire Charges	296547.00	
				2050.00	Honorarium Expenses	4900.00	
170784.00	Amount collected from employees for payment to Canfin Homes	170784.00		3809.00	Annual report translation charges	4985.00	9667105.92
				20250.00	Website	0.00	
39406.00	TDS on Contract	36692.00		12223.00	Insurance Premium	27339.00	
35508.00	Amount collected from employees for payment to HDFC	35508.00		3300.00	Solar Power Fencing -Recurring	1400.00	28739.00

As at 31.03.2002	Receipts	Current year ended 31.03.2003	Current Year ended 31.03.2003	As at 31.03.2002	Receipts	Current year ended 31.03.2003	Current Year ended 31.03.2003
24334.00	Leave Salary contribution	36300.00	1757613.00		Capital Expenditure		
55747.18	To Amount transferred from			59734.00	Furniture	57392.00	
	Projects (Sch.14)	0.00		1112089.00	Library Books	1152228.31	
249523.00	To Receipts towards Workshops/			0.00	Computers	406982.00	
	Projects (Sch.11)	806196.00		84932.00	Equipment	637286.00	
4500.00	To Audit fees reimbursed by			18300.00	Capital Work-in-progress		
	projects	0.00			Building	10200.00	
9900.00	To Amount refunded by Scorpion	0.00		14688.00	Leased line connection	506407.00	
7000.00	To Refund of loan by cpp	0.00		0.00	Buildings	111237.00	
20000.00	To Amount received towards EMD			0.00	Canteen Assets	67405.00	
	for leased line connection	3993.00		0.00	Electrical Fittings	93600.00	
0.00	To Compensation received			6500.00	Minor Equipment	0.00	
	for LAN	38389.00	848578.00	452192.00	Solar Power Fencing	0.00	3042737.31
					By Other Advances Paid		
				338649.18	Expenditure under projects		
					(Sch.8)	334136.00	
				53408.81	Amount surrendered to		
					MoEF (Sch.9)	44311.00	
				463103.00	Advance/Deposit (Sch.10)	1192716.00	
				4500.00	Festival Advance	4500.00	
				1150.00	Amount transferred to		
					Membership	0.00	1575663.00
					By Remittances & Recoveries		
				275711.00	TDS on Salaries	544288.00	
				17220.00	Professional Tax	7950.00	
				723797.00	Contributory Provident Fund	653015.00	
				40171.00	TDS on contract	36692.00	
				35508.00	Amount remitted to HDFC		
					on behalf of employees	35508.00	
				170784.00	Amount remitted to Canfin		
					Homes on behalf of		
					employees	170784.00	
				111070.00	Group Insurance	113753.00	
				100513.00	Amount remitted to IOB on		
					behalf of employees	159323.00	1721313.00

As at 31.03.2002	Receipts	Current year ended 31.03.2003	Current Year ended 31.03.2003	As at 31.03.2002	Receipts	Current year ended 31.03.2003	Current Year ended 31.03.2003
					By Closing Balance		
					In Savings Bank A/c.		
				18956.90	State Bank of India		
					A/c.No.01100050205	20252.85	
				15000.00	Cash on Hand -		
					Imprest Balance	15000.00	
				2639531.63	Indian Overseas bank		
					A/c. No.7300	4197548.40	4232801.25
14224689.66			**20268359.48**	**14224689.66**			**20268359.48**

For Ramanathan & Krishnakumar
Chartered Accountants

S. Krishnakumar
Partner

Ramanathan & Krishnakumar COIMBATORE 641 029 Chartered Accountants

28/3/2003.

Jayashree Muralidharan
Senior Finance Officer
Sálim Ali Centre for Ornithology
And Natural History
Anaikatty, Coimbatore - 641108

Dr. V.S. Vijayan
Director
Sálim Ali Centre for Ornithology
and Natural History
Anaikatty, Coimbatore - 641108

Schedule to Receipts & Payments for the Period ended 31.03.2003
(01.04.2002 to 31.03.2003)

Period ended 31.03.2002 Rs.P.		Period ended 31.03.2003 Rs.P.
	SCHEDULE 1	
	SALARIES & ESTABLISHMENT EXPENSES	
2606791.00	Pay of Officers/Establishment	2644552.00
1135291.00	Dearness Allowance	1295525.00
26924.00	Arrears of Dearness Allowance	52439.00
116272.00	House Rent Allowance	115685.00
16035.00	Bonus	20822.00
138068.00	Interest on CPF	278597.00
131589.00	CPF Contribution of SACON	295441.00
32058.00	Medical Reimbursement	43045.00
524.00	Earned Leave encashment	42436.00
11914.00	Overtime Allowance	11706.00
5300.00	Transport Allowance	900.00
660.00	Sterilisation Allowance	660.00
1125.00	Washing Allowance	1080.00
2578.00	Arrears of Washing Allowance	0.00
0.00	Ex-gratia Payment	98564.00
324.00	Reimbursement of o/s LTC	0.00
4000.00	Lumpsum Incentive	8000.00
13760.00	Composite Hill allowance	3600.00
0.00	Arrears on promotion	475515.00
0.00	Arrears of CPF contribution on promotion	35601.00
4243213.00		**5426168.00**
	SCHEDULE 2	
	POSTAGE & TELEPHONE	
46429.00	Postage Expenses	64079.00
250807.54	Telephone Charges	223656.72
297236.54		**287735.72**
	SCHEDULE 3	
	PRINTING & STATIONERY	
17573.00	Printing & Stationery	24420.00
10805.00	Stationery - Office	225.00
28378.00		**24645.00**
	SCHEDULE 4	
	VEHICLE MAINTENANCE	
88653.00	Fuel to Jeep	83249.00
62493.00	Repairs/Service/Insurance	117679.00
3290.00	Rent/Rates & Taxes	3270.00
154436.00		**204198.00**
	SCHEDULE 5	
	AUDIT FEES	
10900.00	Audit fees	18900.00
28615.00	Internal Audit Fees	39901.00
39515.00		**58801.00**

Period ended 31.03.2002 Rs.P.		Period ended 31.03.2003 Rs.P.
	SCHEDULE 6	
	OTHER PROFESSIONAL CHARGES	
0.00	Legal Fees	70000.00
0.00	Other Professional Charges	0.00
0.00		**70000.00**
	SCHEDULE 7	
	MISCELLANEOUS EXPENSES	
2541.00	Xerox Charges	103.00
5545.00	Local Travel	30189.00
0.00	Railway Freight	0.00
4725.00	Subscription to Newspapers	3490.00
4600.00	Water Charges	15895.00
13860.00	Gardening & Office Furnishing	4300.00
13862.00	Working Lunch	19987.00
406.00	Liveries	2572.50
69047.00	Other Miscellaneous Consumables	129226.00
102264.00	Repairs & maintenance Of Buildings	47901.00
13998.00	Land & Building Tax	16703.00
611.00	Uniform	0.00
17516.00	Fuel for Generator	22010.00
4749.00	Others	2385.00
0.00	Repairs & Maintenance of Furniture	1650.00
20429.00	Hostel Expenses	12492.00
0.00	SACON Membership	20.00
0.00	Guest Lecture fees	500.00
0.00	Lease rent	40404.00
274153.00		**349827.50**
	SCHEDULE 8	
	ADVANCE/EXPENDITURE UNDER PROJECT/WORKSHOPS	
147.00	Documentation	0.00
156.00	BNHS Corridor	0.00
202787.00	Edible-nest Swiftlet	159956.00
4.18	Action Plan for NBR	0.00
42220.00	Biodiversity Thermatic workshop	0.00
2255.00	Elephant Worskshop	0.00
500.00	Turtle recovery	0.00
2105.95	Acquaculture	0.00
188.01	Endemic Lizard	0.00
860.83	Lesser Florican	0.00
1671.71	Seagrass	0.00
500.00	Keoladeo National Park	50000.00
500.00	Ethnoecology	0.00
1119.00	Pesticide	0.00
4809.00	Seed Dispersal	0.00
8912.00	Conservation Planning	0.00
4750.00	Avifauna of Andaman	0.00
500.00	Fish Conservation	0.00

Period ended 31.03.2002 Rs.P.		Period ended 31.03.2003 Rs.P.
2479.00	People Participatory Approach	0.00
7659.00	Prioritisation	0.00
33.00	TNFD Workshop	0.00
13359.50	Landuse and Biodiversity	0.00
25452.00	Economic dev. Instt	0.00
14962.00	NBSAP Dr Ajith Kumar	108140.00
0.00	NBSAP Dr S N Prasad	5030.00
0.00	UNDP	8540.00
0.00	Nilgiri Wood Pigeon	2470.00
337930.18		**334136.00**

SCHEDULE 9
AMOUNT RETURNED TO THE MOEF

32.76	Fragmented Rain Forest	0.00
3567.05	Rapid Assessment	0.00
49809.00	Ethonoecology	0.00
53408.81		**0.00**

SCHEDULE 10
ADVANCE/DEPOSIT

278681.00	Amount paid for procuring furniture	0.00
14140.00	EB Deposit	0.00
85000.00	Advance for paying TA/DA to the Assessment Committee	0.00
70000.00	Advance for paying TA/DA to the GC Meeting	0.00
5000.00	Advance to Dr Pramod	5000.00
51.00	Advance to Mr Debnik Mukherjee	0.00
3000.00	Advance to Mr Kutty	0.00
7231.00	Advance to Dr R Sankaran	130000.00
0.00	Advance to Mr Anoopdas	3401.00
0.00	Advance to Mr Vivek	32000.00
0.00	Advance to Mr Unnikrishnan	805.00
0.00	Advance to Dr Balasubramaniam	2500.00
0.00	Advance to Mr Anjan Kumar Prusty	1000.00
0.00	Refundable advance to BSNL	362542.00
0.00	Water Connection deposit	750.00
0.00	Advance for computer	320554.00
0.00	Deposit to BSNL for leased line	334164.00
463103.00		**1192716.00**

SCHEDULE 11
RECEIPT TOWARDS PROJECTS/WORKSHOPS

0.00	NBSAP-Dr Ajith kumar	74775.00
0.00	NBSAP-Dr S N Prasad	15000.00
0.00	Edible nest Swiftlet	398921.00
0.00	Envis Centre	317500.00
0.00		**806196.00**

Period ended 31.03.2002 Rs.P.		Period ended 31.03.2003 Rs.P.
	SCHEDULE 12	
	RECOVERIES OF ADVANCES/DEPOSITS	
0.00	Unspent advance of Assessment Committee	28544.00
0.00	Unspent advance of GC Meeting	5212.00
100000.00	Car advance recovery	0.00
43000.00	Computer advance recovery	0.00
0.00	Dr Pramod	1171.00
0.00	Mr Mukherjee	51.00
143000.00		**34978.00**
	SCHEDULE 13	
	AMOUNT TRANSFERRED TO SACON ON COMPLETION OF PROJECTS	
13359.50	Landuse Biodiversity	0.00
25452.00	Economic Devel. Instt.	0.00
719.00	Swiftlet Project	0.00
147.00	Documentation	0.00
156.00	BNHS Corridor	0.00
33.00	Elephant Census	0.00
4.18	Action plan for NBR	0.00
2105.95	Acquaculture	0.00
188.01	Endemic Lizard	0.00
860.83	Lesser Florican	0.00
1671.71	Seagrass	0.00
1912.00	Conservation planning	0.00
1979.00	PPA	0.00
7159.00	Prioritisation	0.00
55747.18		**0.00**
	SCHEDULE A	
	PROJECT UNDER RESEARCH CONTINGENCY	
	Database on Indian Ornithology	9000.00
	Lessor Florican	42977.00
	Research Contingency others	163321.00
	Great Pied HB	13582.00
	Anaikatty	249944.00
	Silent Valley	138126.00
	KNP Monitoring	59709.00
	Monitoring Project	129707.00
	Biodiversity Register	43165.00
	Radiant of Hametalogy	40724.00
	Physiclogical Project	38465.00
	Nilgiri Laughing Thrust	5375.00
		934095.00

For Ramanathan & Krishnakumar
Chartered Accountants

S. Krishnakumar
Partner

Jayashree Muralidharan
Senior Finance Officer
Sálim Ali Centre for Ornithology
And Natural History
Anaikatty, Coimbatore - 641108

Dr. V.S. Vijayan
Director
Sálim Ali Centre for Ornithology
and Natural History
Anaikatty, Coimbatore - 641108

FORM OF FINANCIAL STATEMENTS (NON-PROFIT ORGANISATIONS)
Name of Entity: Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore
CONSOLDIATED BALANCE SHEET FORTHE PROJECTS OF SACON AS AT 31.03.2003

(Amount - Rs.)

	Schedule	Current Year	Previous Year
CORPUS/CAPITAL FUND AND LIABILITIES			
CORPUS / CAPITAL FUND	1	0.00	0.00
RESERVES AND SURPLUS	2	6352242.57	7905097.00
EARMARKED/ENDOWMENT FUNDS	3	0.00	0.00
SECURED LOANS AND BORROWINGS	4	45000.00	0.00
UNSECURED LOANS AND BORROWINGS	5	0.00	0.00
DEFERRED CREDIT LIABILITIES	6	0.00	0.00
CURRENT LIABILITIES AND PROVISIONS	7	499913.00	0.00
TOTAL		**6897155.57**	**7905097.00**
ASSETS			
FIXED ASSETS	8	4065261.00	2153540.00
INVESTMENTS-FROM EARMARKED/ENDOWMENT FUNDS	9	0.00	0.00
INVESTMENTS-OTHERS	10	0.00	0.00
CURRENT ASSETS, LOANS, ADVANCES ETC.	11	2831894.57	5751557.00
MISCELLANEOUS EXPENDITURE (to be extent not written off or adjusted)		0.00	0.00
TOTAL		**6897155.57**	**7905097.00**
SIGNIFICANT ACCOUNTING POLICIES	24		
CONTINGENT LIABILITIES AND NOTES ON ACCOUNTS	25		

For Ramanathan & Krishnakumar
Chartered Accountants

S. Krishnakumar
Partner

Jayashree Muralidharan
Senior Finance Officer
Sálim Ali Centre for Ornithology
And Natural History
Anaikatty, Coimbatore - 641108

Dr. V.S. Vijayan
Director
Sálim Ali Centre for Ornithology
and Natural History
Anaikatty, Coimbatore - 641108

FORM OF FINANCIAL STATEMENTS (NON-PROFIT ORGANISATIONS)
Name of Entity: Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore
SCHEDULES FORMING PART OF BALANCE SHEET PROJECTS AS AT 31.03.2003

(Amount - Rs.)

	Current Year		Previous Year	
SCHEDULE 1. CORPUS / CAPITAL FUND:				
Balance as at the beginning of the year	0.00		0.00	
Add: Contributions towards Corpus/Capital Fund	0.00		0.00	
Add: Donation received during the year	0.00		0.00	
Add/Deduct): Balance of net income/(expenditure)	0.00			
transferred from the Income and Expenditure A/c	0.00		0.00	
BALANCE AS AT THE YEAR - END		**0.00**		**0.00**
SCHEDULE 2. RESERVES AND SURPLUS:				
1. Capital Reserve:				
As per last Account	0.00		0.00	
Addition during the year	1106098.00		0.00	
Less: Deductions during the year	0.00	1106098.00	0.00	0.00
2. Revaluation Reserve:				
As per last Account				
Addition during the year				
Less: Deductions during the year				
3. Special Reserves:				
As per last Account				
Addition during the year				
Less: Deductions during the year				
4. General Reserve:				
As per last Account	7905097.00		7194586.00	
Add: Amount transferred from SACON Hostel account	0.00		0.00	
Add: Amount transferred from SACON Membership a/c	0.00		0.00	
Add: Grant and Consultancy income received				
during the year	0.00		8034760.00	
Total	**7905097.00**		**15229346.00**	
Less: Deductions during the year	2443775.43		7324249.00	
	5461321.57		**7905097.00**	
Less: Interest surrendered to UNDP	195950.00		0.00	
Less: Amount surrendered to the sponsors	19227.00	5246144.57	0.00	7905097.00
TOTAL		**6352242.57**		**7905097.00**

For Ramanathan & Krishnakumar
Chartered Accountants

S. Krishnakumar
Partner

Ramanathan & Krishnakumar COIMBATORE 641 009. Chartered Accountants

Jayashree Muralidharan
Senior Finance Officer
Sálim Ali Centre for Ornithology
And Natural History
Anaikatty, Coimbatore - 641108

Dr. V.S. Vijayan
Director
Sálim Ali Centre for Ornithology
and Natural History
Anaikatty, Coimbatore - 641108

FORM OF FINANCIAL STATEMENTS (NON-PROFIT ORGANISATIONS)

Name of Entity: Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore

SCHEDULES FORMING PART OF BALANCE SHEET PROJECTS AS AT 31.03.2003

(Amount - Rs.)

	Current Year		Previous Year	
SCHEDULE 4. SECURED LOANS AND BORROWINGS:				
1. Central Government				
2. State Government (Specify)				
3. Financial Institution				
a) Term Loans				
b) Interest accrued and due				
4. Banks:				
a) Term Loans: Interest accrued and due				
b) Other Loans (Specify) : Interest accrued and due				
5. Other Institutions and Agencies				
6. Debentures and Bonds				
7. Others (Specify) : Received from Corpus Fund		45000.00	0.00	
TOTAL		**45000.00**		**0.00**
SCHEDULE 7. CURRENT LIABILITIES AND PROVISIONS				
A. CURRENT LIABILITIES				
1. Acceptances	0.00		0.00	
2. Sundry Creditors:				
a. For Goods	0.00		0.00	
b. Others	37425.00		0.00	
3. Advances Received	0.00		0.00	
4. Interest accrued but not due on:				
a. Secured Loans / borrowings	0.00		0.00	
b. Unsecured Loans / borrowings	0.00		0.00	
5. Statutory Liabilities				
a. Overdue	0.00		0.00	
b. Others	0.00		0.00	
TOTAL (A)		**37425.00**		**0.00**
B. PROVISIONS				
1. For Taxation	0.00		0.00	
2. Gratuity	0.00		0.00	
3. Superannuation / Pension	0.00		0.00	
4. Accumulated Leave Encashment	0.00		0.00	
5. Trade Warranties / Claims	0.00		0.00	
6. Others (Specify)	462488.00		0.00	
TOTAL (B)		**462488.00**		0.00
TOTAL (A+B)		**499913.00**		**0.00**

For Ramanathan & Krishnakumar
Chartered Accountants

S. Krishnakumar
Partner

Ramanathan & Krishnakumar COIMBATORE 641 009. Chartered Accountants

28/7/2003

Jayashree Muralidharan
Senior Finance Officer
Sálim Ali Centre for Ornithology
And Natural History
Anaikatty, Coimbatore - 641108

Dr. V.S. Vijayan
Director
Sálim Ali Centre for Ornithology
and Natural History
Anaikatty, Coimbatore - 641108

FORM OF FINANCIAL STATEMENTS (NON-PROFIT ORGANISATIONS)
Name of Entity: Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore
SCHEDULES FORMING PART OF CONSOLIDATED BALANCE SHEET OF PROJECTS AS AT 31.03.2003

(Amount - Rs.)

DESCRIPTION	GROSS BLOCK				DEPRECIATION				NET BLOCK
	Cost/ valuation as at beginning of the year	Additions during the year	Deductions during the year	Cost/ value at the year-end	As at the beginning of the year	For the year	On deductions during the year	Total up to the year end	As at the current year-end
SCHEDULE 8. FIXED ASSETS									
1. PLANT MACHINERY & EQUIPMENT	2088840.00	1488135.00	0.00	3576975.00	99102.00	127172.00	0.00	226274.00	3350701.00
Add: transferred from UNDP	279431.00	0.00	0.00	279431.00	26182.00	13273.00	0.00	39455.00	239976.00
2. COMPUTER/PERIPHERALS	64700.00	0.00	0.00	64700.00	15373.00	3073.00	0.00	18446.00	46254.00
Add: transferred from UNDP	826667.00	0.00	0.00	826667.00	264334.00	134003.00	0.00	398337.00	428330.00
TOTAL	**3259638.00**	**1488135.00**	**0.00**	**4747773.00**	**404991.00**	**277521.00**	**0.00**	**682512.00**	**4065261.00**

(Note to be given as to cost of assets on hire purchase basis included above)

For Ramanathan & Krishnakumar
Chartered Accountants

S. Krishnakumar
Partner

Ramanathan & Krishnakumar COIMBATORE 641 028. Chartered Accountants

Jayashree Muralidharan
Senior Finance Officer
Sálim Ali Centre for Ornithology
And Natural History
Anaikatty, Coimbatore - 641108

Dr. V.S. Vijayan
Director
Sálim Ali Centre for Ornithology
and Natural History
Anaikatty, Coimbatore - 641108

FORM OF FINANCIAL STATEMENTS (NON-PROFIT ORGANISATIONS)
Name of Entity: Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore
SCHEDULES FORMING PART OF BALANCE SHEET OF PROJECTS AS AT 31.03.2003

(Amount - Rs.)

	Current Year		Previous Year	
SCHEDULE 11. CURRENT ASSETS, LOANS, ADVANCES ETC.				
A. CURRENT ASSETS:				
1. Inventories:				
a. Stores and Spares				
b. Loose Tools				
c. Stock-in-trade				
Finished Goods				
Work-in-progress				
Raw Materials				
2. Sundry Debtors:				
a. Debts Outstanding for a period exceeding six months (Sch.11.2 a)				
b. Others				
3. Cash balances in hand (including cheques/ drafts and imprest)				
4. Bank Balances:				
a. With Scheduled Banks:				
- On Current Accounts				
- On Deposit Accounts (includes margin money)				
- On Savings Accounts				
Indian Overseas Bank, Chinnathadagam	2523936.57		5499688.00	
Indian Overseas Bank, Dehradun	31857.00	**2555843.57**	40000.00	**5539688.00**
b. With non-Scheduled Banks:				
- On Current Accounts				
- On Deposit Accounts				
- On Savings Accounts				
5. Post Office-Savings Accounts				
TOTAL (A)		**2555843.57**		**5539688.00**

For Ramanathan & Krishnakumar
Chartered Accountants

S. Krishnakumar
Partner

Ramanathan & Krishnakumar COIMBATORE 641 029. Chartered Accountants

Jayashree Muralidharan
Senior Finance Officer
Sálim Ali Centre for Ornithology
And Natural History
Anaikatty, Coimbatore - 641108

Dr. V.S. Vijayan
Director
Sálim Ali Centre for Ornithology
and Natural History
Anaikatty, Coimbatore - 641108

FORM OF FINANCIAL STATEMENTS (NON-PROFIT ORGANISATIONS)
Name of Entity: Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore
SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31.03.2003

(Amount - Rs.)

	Current Year		Previous Year	
SCHEDULE 11. CURRENT ASSETS, LOANS, ADVANCES ETC. (Contd.)				
B. LOANS, ADVANCES AND OTHER ASSETS				
1. Loans:				
a. Staff	0.00		0.00	
b. Other Entities engaged in activities/objectives similar to that of the Entity	0.00		0.00	
c. Other (specify) - Loan from SACON Corpus Fund	20000.00	**20000.00**	20000.00	**20000.00**
2. Advances and other amounts recoverable in cash or in kind or for value to be received:				
a. On Capital Account				
b. Prepayments	0.00		0.0	
c. Others	193568.00	193568.00	148877.00	148877.00
3. Income Accrued:				
a. On Investments form Earmarked/Endowment Funds				
b. On Investments - Others				
c. On Loans and Advances				
d. Others - License fees (includes income due unrealised Rs.....)		**0.00**		**0.00**
4. Claims Receivable - TDS on Contract		**62483.00**		**42992.00**
TOTAL (B)		276051.00		211869.00
TOTAL (A + B)		**2831894.57**		**5751557.00**

For Ramanathan & Krishnakumar
Chartered Accountants

S. Krishnakumar
Partner

Jayashree Muralidharan
Senior Finance Officer
Sálim Ali Centre for Ornithology
And Natural History
Anaikatty, Coimbatore - 641108

Dr. V.S. Vijayan
Director
Sálim Ali Centre for Ornithology
and Natural History
Anaikatty, Coimbatore - 641108

FORM OF FINANCIAL STATEMENTS (NON-PROFIT ORGANISATIONS)
Name of Entity: Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore
CONSOLIDATED INCOME AND EXPENDITURE ACCOUNT FORTHE PROJECTS OF SACON
FOR THE YEAR ENDED 31.3.2003

(Amount - Rs)

	Schedule	Current Year	Previous Year
INCOME			
Income from Sales / Services	12	0.00	0.00
Grants/ Subsidies	13	4609500.00	0.00
Fees/Subscriptions	14	1004035.00	0.00
Income from Investments (Income on Invest. from earmarked/ endow. Funds transferred to Funds)	15	0.00	0.00
Income from Royalty, Publication etc.	16	0.00	0.00
Interest Earned	17	171966.00	152286.00
Other Income	18	54092.57	0.00
Increase/ (decrease) in stock of Finished goods and works in progress	19	0.00	0.00
TOTAL (A)		**5839593.57**	**152286.00**
Establishment and other expenditure	20	7600857.00	7476535.00
Depreciation (Net Total for the year-end - corresponding to Schedule 8)		277521.00	0.00
TOTAL (B)		**7878378.00**	**7476535.00**
Balance being excess of Income over Expenditure (A-B)		**-2038784.43**	**-7324249.00**
Depreciation upto 31.03.2002		404991.00	0.00
BALANCE BEING SURPLUS/(DEFICIT) CARRIEDTO CORPUS/ CAPITAL FUND		**-2443775.43**	**-7324249.00**
SIGNIFICANT ACCOUNTING POLICIES	24		
CONTINGENT LIABILITIES AND NOTES ON ACCOUNTS	25		

For Ramanathan & Krishnakumar
Chartered Accountants

S. Krishnakumar
Partner

Jayashree Muralidharan
Senior Finance Officer
Sálim Ali Centre for Ornithology
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Anaikatty, Coimbatore - 641108

Dr. V.S. Vijayan
Director
Sálim Ali Centre for Ornithology
and Natural History
Anaikatty, Coimbatore - 641108

FORM OF FINANCIAL STATEMENTS (NON-PROFIT ORGANISATIONS)
Name of Entity: Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore
SCHEDULES FORMING PART OF CONSOLIDATED INCOME & EXPENDITURE FOR PROJECTS
FOR THE YEAR ENDED 31.3.2003

(Amount- Rs.)

	Current Year	Previous Year
SCHEDULE 13. GRANTS/SUBSIDIES		
(Irrevocable Grants & Subsidies Received)		
1. Central Government	4609500.00	0.00
2. State Government(s)	0.00	0.00
3. Government Agencies	0.00	0.00
4. Institutions/Welfare Bodies	0.00	0.00
5. International Organisations	0.00	0.00
6. Others (Specify)	0.00	0.00
TOTAL	**4609500.00**	**0.00**
SCHEDULE 14. FEES/SUBSCRIPTIONS		
1. Entrance Fees		
2. Annual Fees/Subscriptions		
3. Seminar / Program Fees		
4. Consultancy Fees	**1004035.00**	0.00
5. Others (Specify)		
TOTAL	**1004035.00**	**0.00**
Note:- Accounting Policies towards each item are to be disclosed		
SCHEDULE 17. INTEREST EARNED		
1. On Term Deposits:		
a. With Scheduled Banks	0.00	0.00
b. With Non-Scheduled Banks	0.00	0.00
c. With Institutions	0.00	0.00
d. Nationalised Bank	48726.00	65287.00
2. On Savings Accounts:		
a. With Scheduled Banks	0.00	0.00
b. With Non-Scheduled Banks	0.00	0.00
c. Post Office Savings Accounts	0.00	0.00
d. Nationalised Bank	123240.00	86999.00
3. On Loans:		
a. Employees / Staff	0.00	0.00
b. Others	0.00	0.00
4. Interest on Debtors and Other Receivables	0.00	0.00
TOTAL	**171966.00**	**152286.00**
Note:- Tax deducted at source to be indicated		

For Ramanathan & Krishnakumar
Chartered Accountants

S. Krishnakumar
Partner

Jayashree Muralidharan
Senior Finance Officer
Sálim Ali Centre for Ornithology
And Natural History
Anaikatty, Coimbatore - 641108

Dr. V.S. Vijayan
Director
Sálim Ali Centre for Ornithology
and Natural History
Anaikatty, Coimbatore - 641108

FORM OF FINANCIAL STATEMENTS (NON-PROFIT ORGANISATIONS)
Name of Entity: Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore
SCHEDULES FORMING PART OF CONSOLIDATED INCOME & EXPENDITURE FORTHE PROJECTS
FOR THE YEAR ENDED 31.3.2003

(Amount- Rs)

	Current Year	Previous Year
SCHEDULE 18 OTHER INCOME		
1. Profit on Sale/disposal of Assets:		
a. Owned assets	0.00	0.00
b. Assets acquired out of grants, or received free of cost	0.00	0.00
2. Export Incentives realized	0.00	0.00
3. Fees for Miscellaneous Services	0.00	0.00
4. Miscellaneous Income	54092.57	0.00
TOTAL	**54092.57**	**0.00**
SCHEDULE 20. ESTABLISHMENT AND OTHER EXPENSES		
a. Salaries and Wages	889009.00	566479.00
b. Traveling expenditure	1256086.00	1206514.00
c. Expendables	700096.00	336074.00
d. Other project cost	113924.00	75605.00
e. contingencies	9154.00	9647.00
f. Institutional charges	275125.00	179000.00
g. Admn. support expenditure	709812.00	367768.00
h. National consultants	278000.00	399615.00
i. Sub-contracts-Field surveys	405000.00	0.00
j. Sub-contracts-Remote sensing	1797157.00	3571434.00
k. Reporting cost	97018.00	0.00
l. Training	645155.00	0.00
m. Sundries	425321.00	389399.00
n. Workshop expenses	0.00	375000.00
TOTAL	**7600857.00**	**7476535.00**

For Ramanathan & Krishnakumar
Chartered Accountants

S. Krishnakumar
Partner

Jayashree Muralidharan
Senior Finance Officer
Sálim Ali Centre for Ornithology
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Dr. V.S. Vijayan
Director
Sálim Ali Centre for Ornithology
and Natural History
Anaikatty, Coimbatore - 641108

Salim Ali Centre for Ornithology and Natural History, Anaikatty, Coimbatore
Consolidated Receipts and Payments Account of Projects for the year ended 31 March 2003

Up to 31.03.2002	Receipts	Current year ended 31.03.2003	Up to 31.03.2002	Payments	Rs.P. Current year ended 31.03.2003	
2966053.00	To Opening Balance	5539688.00		By Revenue Expenditure		
			565129.00	Salaries & Wages	818180.00	
	To Grant received during the year		1185051.00	Travelling/Duty Travel	1075745.00	
125000.00	NBR Reptile	0.00	335543.00	Expendables/Consumables	524913.00	
123000.00	NBR Hornbill	0.00	9325.00	Contingencies	9049.00	
4500000.00	UNDP	4200000.00	73826.00	Other Project Cost	83386.00	
164500.00	Sandee	164500.00	375000.00	Workshop Expenditure	0.00	
211000.00	Nilgiri Wood Pigeon	185000.00	3571434.00	Sub-contract-Remote Sensing	1797157.00	
90000.00	Grey headed bulbul	60000.00	0.00	Sub-contract field surveys	405000.00	
1842000.00	Sikkim	0.00	179000.00	Institutional Charges	275125.00	
			0.00	Training	645155.00	
979260.00	To Consultancy income received (1004035-19491)	984544.00	399615.00	Consultancy	267000.00	
			367768.00	Administrative Support	653063.00	
152286.00	To Bank Interest	209391.00	0.00	Reporting Cost	96168.00	
9032.00	To Refund of Unspent advances by the PI/JRF/SRF	10691.00	389399.00	Sundries	417516.00	7067457.00
0.00	To Loan received from SACON Corpus Fund	45000.00	1566756.00	Purchase of Fixed Assets/Equipment Advances		1458991.00
10000.00	To Refund of rent advance	0.00				
			0.00	Amount surrendered to the sponsors on		
0.00	To Amount paid to the State coordinator refunded	54092.57		completion of the project Sea turtle		19227.00
3500000.00	To FDR foreclosed	0.00	0.00	By amount/interest surrendered to UNDP		195950.00
2100.00	To TDS refund by IT	0.00	110747.00	By Advances to JRF/PI		143148.00
			5950.00	Other Advances & Deposit		12290.00
			5499688.00	Bank balance IOB, Chinnathadagam		2523986.57
			40000.00	By Bank Balance IOB, Dehradun		31857.00
14674231.00		**11452906.57**	**14674231.00**			**11452906.57**

For Ramanathan & Krishnakumar
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